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Invention



THE GREAT AMERICAN WHOSE INVENTIVE GENIUS PERFECTED THE PHONO-
GRAPH AND CINEMATOGRAPH: THOMAS ALVA EDISON IN HIS WORKSHOP
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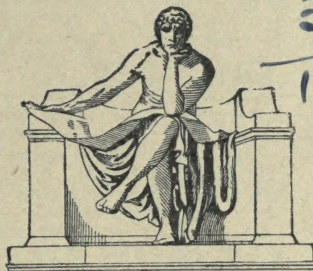
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FROUDE-HOLMES



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HARMSWORTH'S UNIVERSAL ENCYCLOPEDIA

VOLUME 6

Froude, RICHARD HURRELL (1803-36). Anglican divine. Elder brother of J. A. Froude, he was born at Dartington and educated at Eton and Oriel College, Oxford, being a pupil of John Keble. As fellow and tutor of Oriel, he brought Newman and Keble together, and thus began the Oxford Movement (*q.v.*). Ordained deacon in 1828 and priest in 1829, he resigned his tutorship in 1830. While at Rome with Newman he began the *Lyra Apostolica*, his contributions to which are initialled β . After visiting the West Indies for his health, and lecturing there, 1833-35, he died of consumption, at Dartington, Feb. 28, 1836. His Remains were ed. by Keble and Newman, part I, 1838, and J. B. Mozley, part II, 1839. See R. H. Froude, L. I. Guiney, 1904.

F.R.S. Abbrev. for Fellow of the Royal Society.

Fructidor (Fr., month of fruit). The twelfth and last month in the year as rearranged during the French revolution. It began on the 18th or 19th of August. The 18th of Fructidor is the name given to the *coup d'état* of Sept. 4, 1797, when the directory used military force to check the growing power of the royalists. See Calendar.

Fructose OR **FRUIT SUGAR**. Variety of sugar which occurs together with dextrose in all sweet fruits. It is produced by heating cane sugar with water containing a few drops of hydrochloric acid, by heating inulin with water to 100° C. for twenty-four hours, and by the oxidation of mannitol. Fructose is sweeter than cane sugar, and is not readily crystallised. It is frequently used as a sweetening agent for diabetic patients.

Frue Vanner. Machine devised by Captain Frue, of the Silver Islet Mine, Ontario, in 1874. Largely used for the concentration of gold ore, particularly pulp and slimes. It consists essentially of an endless band of canvas or indiarubber stretched between horizontal rollers which continuously revolve and at the same time have a sidewise shaking motion. The lower part of the travelling belt passes through a water trough, while the upper part has a slope of a few inches in its length of about 12 feet from the front end to the back. Ore and water are fed to the higher end,

the heavier and richer portions adhere until they are washed off by the water in the trough, and the lighter "slimy" and worthless portions are thrown off as the band turns round the lower roller and pass away as waste. See Gold.

Fruit (Lat. *fructus*, enjoying). General term for that part of a plant which contains the seed. Many fruits are edible, and with this the word is chiefly associated—the chief fruits being apples, pears, plums, grapes, currants, peaches, etc. Nuts are also fruit. The term is also used for any produce of the earth. A fruiterer is a dealer in fruit, although such are commonly called greengrocers, and a fruitarian is one who lives wholly or mainly on fruit.

Fruit, PRESERVATION OF. The most common method of preserving fruit is boiling it with sugar until it becomes jam (*q.v.*). But it may be preserved in other ways. It may be crystallised, the sugar preserving it as in jam; it may be put through a drying process, so that the moisture is entirely evaporated, decay being thus prevented; or it may be hermetically sealed in vessels with syrup or water. The natural flavour and colour are best preserved by the last method, which may be carried out on a small scale at home, quite as well as in the factory. That the process was employed by the Romans is proved by sealed jars found in the ruins of Pompeii, with the fruit intact.

In bottling, the fruit may be put in the bottles, the vessels filled up with water or syrup, and the caps or stoppers, fitted with rubber rings to render them airtight, screwed on before the cooking process. The bottles are then stood upon slats of wood in a copper or pan, up to their necks in cold water, which is gradually brought to the boil. The bottles are then taken out and allowed to cool, when they are ready for storage. During the boiling the bottles must not stand upon the bottom of the copper, or they will break. Another method is to cook the fruit in the bottles or jars as described, but with the stoppers or coverings off. When the cooking is completed, the bottles are taken out and the stoppers screwed down. In both methods it is wise to clamp the stoppers in position temporarily

with iron clips sold for the purpose, removing them when the bottles are cool.

In preserve factories, tins are more extensively used than bottles, being cheaper, less breakable, and more adaptable to mechanical processes. They are specially prepared with a lacquer coating inside, which effectively prevents any ill result from the possible action of the fruit acids on the tin. The tins are filled with fruit and syrup, the lids rapidly fastened on by machinery, and processed or cooked in huge tanks of water brought to the necessary temperature. After cooking, they are allowed to cool, washed, and labelled. Bottled fruits are prepared in the same way, but greater care has to be exercised owing to the fragile character of the glass, and there is more manual work in the packing, which explains why bottled fruits are dearer than tinned. Tinned fruits are as safe and wholesome as bottled fruits.

Properly preserved as described, the fruits have almost the same flavour as when fresh, and the choicest orchard products, which used to be available for only a few weeks in the year, can now be enjoyed during the whole of the twelve months. In addition, huge quantities of the finest pineapples, apricots, lemon cling peaches, and Bartlett pears are now available to the most modest means. These are canned in the same way as English fruits, the cores, stones, and other inedible parts being first removed by machinery. Canned or bottled fruit will keep in a perfect condition for years, if the sealing is really hermetic. Sometimes, however, where a joint is defective, fermentation sets up, and the tin becomes "blown," that is, the gases developed inside cause the tin to swell outwards, and, if left alone, it will eventually burst.

Glacé fruits are first boiled in a strong syrup, and then dried in a moderate oven. The syrup in which the fruit was boiled is then raised to a temperature of about 233° F., and when it is cooled somewhat, the fruit is dipped in until it is well coated, after which it is dried. Crystallised fruits are similarly treated, but when taken out of the syrup are rolled in crushed loaf sugar, and when dry are ready for use.

The preparation of dried fruits is an extensive business on the Continent, but English fruits do not lend themselves to the process of drying, as they contain insufficient natural sugar. The industry has reached the greatest excellence in France, and French plums and Normandy pippins are known and highly appreciated all over the world. The fruits are dried in much the same way as vegetables. The moisture is driven off in graduated ovens, and the natural sugar acts as a preservative. Sometimes the fruit is soaked for a time in a light syrup before being dried.

Dried Fruits

Certain dried fruits form a very important article of diet in many parts of the world, chief among them being the date, fig, raisin, and currant. The date is to the Egyptian what rice is to the Hindu. Such foods have been used for thousands of years, and drying is undoubtedly the most ancient of all forms of fruit preservation. In tropical and semi-tropical countries no artificial heat is required, the fruit being dried in the sun, and in California apricots are extensively treated in this way. Dried figs form a very valuable food, and Dr. Hutchinson, the well-known authority on dietetics, says that, weight for weight,

they are more nourishing than bread. For all the forms of preserving referred to, the fruit must be gathered before it is fully ripe, and while it is firm to the touch.

G. Leighton, M.D.

Fruit Bat. Family of bats (*Pteropodidae*). Much larger than the rest of the order, they are characterised by feeding on fruits instead of insects. The molar teeth are modified in form to suit the change of diet. The head is somewhat fox-like, whence the animals have derived their popular name of flying foxes. Including numerous species, they are found in S. Asia, Australia, Madagascar, and most of the islands of the Pacific Ocean. See Flying Fox.

Fruiterers' Company. London city livery company. First mentioned in 1515, and granted its



Fruiterers' Company arms

first charter in 1606, it took part in the colonisation of Ulster in 1613, and has done much to encourage fruit culture in England, and to promote the interests of the fruit trade. Its offices are at 40, Chancery Lane, W.C.

supplies. These are followed at the beginning of December until well into the spring by fruit from the Pacific Coast, from Oregon, Washington, and British Columbia. Finally, in the beginning of May and throughout summer, Tasmania and Australia furnish supplies.

In respect of attractiveness and honesty in packing, the fruit which comes from N. America and Australasia ranks highest in the British market. The quality of home-grown apples and also those produced on the Continent is generally better, but, owing to faulty methods of packing and distribution, the supplies from the former countries have captured nearly the whole of the high-quality trade, not only in Britain, but in France, Scandinavia, and other European countries.

Methods of Culture

The methods of culture adopted in the various countries are fairly similar, but generally speaking the individual holdings, and the areas of the districts, are smaller in the European countries than in America, Australia, and S. Africa, due chiefly to the fact that the soils and the geological formations from which they are derived are more mixed and diverse. In Europe it is difficult to find large tracts of land of a similar character with a similar climate and situation. In America the reverse is the case. As a result, the culture on the European continent is less centralized, and organization less highly developed than in the other countries.

Fruit growing in Great Britain may roughly be classified as extensive and intensive.

By the extensive method apples and pears are grown in small grass orchards of four to five acres attached to purely agricultural holdings, chiefly in the West of England. This method, which is the oldest form of fruit growing in the county, is now disappearing. Originally the orchards were planted partly to furnish a supply of culinary and dessert fruit for the farmer's own household, but mainly to provide cider for the farm-hands. This custom of supplying cider to the labourers as a perquisite in lieu of wages, already declining, received its deathblow by the orders prohibiting the practice issued by the Agricultural Wages Board which was set up under the Corn Production Act, 1917.

Partly because the apples and pear trees in the farm orchards receive little or no attention as regards general cultivation and the control of insect and fungus pests, but also because many of

FRUIT FARMING: EXTENSIVE & INTENSIVE

R. Wellington, formerly of The Ministry of Food

This article belongs to the group that includes Agriculture; Crops; Dairy Farming; Market Gardening. See also the articles on the various fruits, e.g. Apple; Pear; Plum; also Fruit, Preservation of; Jam-making

The growth of apples, pears, plums, cherries, apricots, peaches, grapes and figs, together with the soft fruits, strawberries, raspberries, gooseberries, and red and black currants, has been carried on in the chief European countries on a fairly extensive scale for many centuries; but it is only since the advent of rlys, and steamships that an extensive international fresh-fruit trade has come into existence.

With perhaps the exception of the U.S.A., no nation of an industrial character consumes more fruit per head than Great Britain. The supplies grown at home are sufficient neither in bulk nor variety to meet the demand, and the British Isles at the present time is the largest fruit-importing nation of the world.

Source of Fruit Supplies

Apples are obtained from the U.S.A., Canada, Spain and Portugal, France, Holland, Tasmania and Australia; oranges from Spain, Portugal, Palestine, Italy, Jamaica, U.S.A., and South Africa; plums from France, Spain, Belgium, Ger-

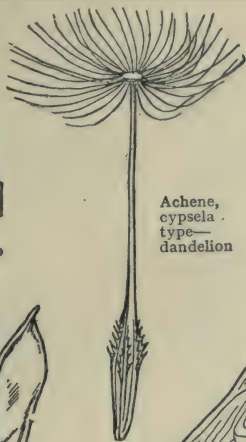
many, America, and S. Africa; pears from France, Holland, Belgium, the U.S.A., and S. Africa; grapes from Spain, Portugal, Holland, and Belgium; nuts from America (walnuts), Spain (sweet chestnuts), Asia Minor, and Brazil; gooseberries, cherries, black and red currants, and strawberries from France, Holland, and Belgium; bananas from Costa Rica, the West Indies, and the Canary Isles.

Seasons and Supplies

By drawing supplies from the two hemispheres, the markets throughout the world can be kept continually supplied. In Great Britain home-grown apples come into season during the last week in July, and continue until the middle or end of February. Earlier supplies from the second week in July are obtained from Spain and Portugal. Towards the middle of August native supplies are augmented from France and Holland. Then in the middle of September the provinces and states of the U.S.A. and Canada bordering the Atlantic freeboard export large



Achene—buttercup
(section)



Achene,
cypsela
type—
dandelion



Nut—acorn of oak



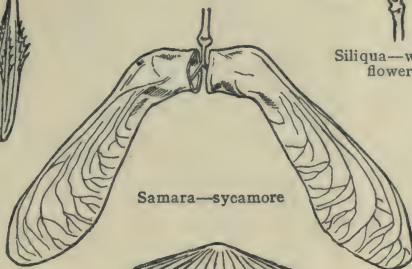
Silique—wall-
flower



Capsule — pimperl,
splitting cleanly across



Capsule—iris, split-
ting into 3 valves



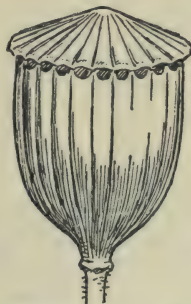
Samara—sycamore



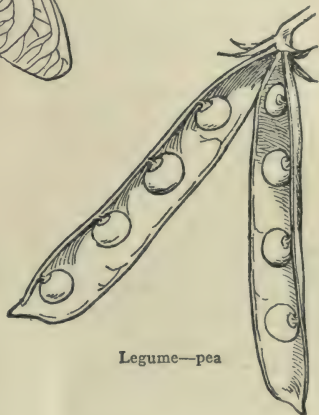
Compound drupes—
blackberry



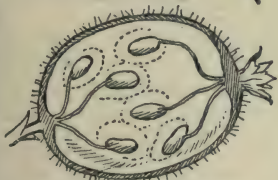
Follicle—stink-
ing hellebore



Capsule — poppy head
with apertures for escape
of seeds



Legume—pea



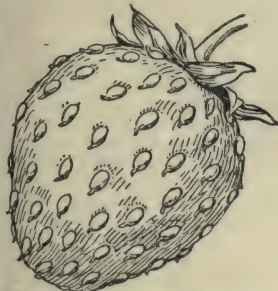
Berry—gooseberry in section
showing seeds in pulp



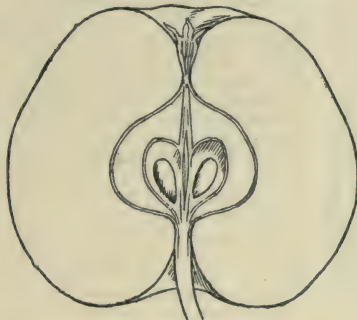
Schizocarp—"cheese" of mallow



Drupe—cherry in sec-
tion, with seed in stone



False fruit—strawberry, fleshy re-
ceptacle with numerous achenes



Pome—apple in section



Hypanthodium—fig in section

FRUIT: EXAMPLES OF THE PRINCIPAL RECEPTACLES FOR SEEDS

the varieties are of poor quality, and no care is taken in picking and packing the fruit, much of it is sold at very low prices, greatly to the detriment of good quality British fruit grown on up-to-date fruit farms.

The magnitude of the area devoted to this type of fruit growing may be gauged from the generally accepted estimate that of no less than 147,401 acres devoted to apple and pear growing in England and Wales alone, 100,000 acres consist of farm orchards in greater or less state of dilapidation and decay. The rate at which these orchards are disappearing may be estimated from the board of agriculture returns of the area devoted to apples and pears in the counties already mentioned. In 1910 there were 114,810 acres, in 1919 there were only 87,310 acres, a reduction of 27,500 acres or 24 per cent. of the original area.

Intensive Method

The intensive method is practised on holdings devoted mainly to the production of fruit. On these fruit farms the percentage of land devoted to fruit is always high. Generally speaking, however, the individual holdings are small, and range from 2-50 acres, though some reach 200-500 acres. On these specialised fruit holdings apples, plums, pears, and cherries, which are known as the "top" fruits, and strawberries, raspberries, gooseberries, red, black, and white currants, and nuts, technically known as the soft or bush fruits, are either grown separately or in combination.

Apples may be grown as cordons, bush-shaped trees, half standards or standards on cultivated ground, or as standards in grass. Where bulk is required, and quality is less important, the trees are grown much larger either as half standards or standards. Pears are grown on a similar basis, but with plums half standards and standards are the more usual shapes, and as a general rule the land is kept cultivated. Cherries, on the other hand, thrive best in grass. In the most intensive forms of culture the "bush" fruits are interplanted amongst the "top" fruits whilst the latter are young. All the bush fruits require cultivated land.

This intensive form of fruit growing on a large scale is of comparatively recent date. A few gardens, scattered around large towns, have been in existence for several hundred years, but with these exceptions the extension of fruit growing on these lines only became possible with the advent

of rapid rail and road transport. Thus, at first, gardens were only found round London in those parts of Kent, Middlesex, and Essex within easy horse-cartage distance of the central markets. Now, however, gardens are to be found throughout Kent, Worcestershire, Cambridgeshire, etc.

British methods of intensive culture are quite as up-to-date as those to be found in Continental countries, in the British colonies, and in the U.S.A., while in certain respects, with regard to fungus and insect pest control, the choice of fruit tree stocks, etc., in particular, Great Britain leads the way. British methods of marketing and distribution are not carried out, however, in a manner befitting the quality of the fruit produced. As regards marketing there is still no combination amongst growers or salesmen insisting on certain standards. This is largely due to the fact that the home grower, unlike the colonial or foreign grower, has his market at his door.

Fruit Areas of England

There are roughly three main areas in which intensive fruit growing is practised on a large scale:

(a) Throughout Kent and extending into Middlesex, Surrey, Sussex, and Essex. Here certain areas specialise in certain kinds of fruit. Thus, around Faversham and Sittingbourne cherries are the chief fruit; around Maidstone in Mid Kent, apples, plums, and cobnuts; around Sandwich in East Kent, early strawberries and early gooseberries.

(b) Cambridgeshire, extending into Norfolk, Lincolnshire, and Huntingdonshire, on the flat fenland around Wisbech, Spalding, and St. Ives. Here apples, plums, gooseberries, and strawberries are the chief crops.

(c) Worcestershire, in the Vale of Evesham, around Pershore and Evesham, is the largest area devoted to plum growing.

Besides these, there are numerous other smaller areas which are rapidly extending. For example, in the Tamar Valley the earliest strawberries and green gooseberries are grown. Around Cheddar in Somerset, and between Southampton and Portsmouth in Hampshire, are hundreds of acres devoted to early strawberries. From all these areas special fast trains are run during the fruit season.

In Herefordshire, around Hereford, Ross, and Ledbury, growers specialise in apples for general dessert and culinary purposes, and in strawberries and black currants for jam. In Norfolk, between Norwich and the coast is an area

specialising in apples, raspberries, and black currants, and many other smaller districts scattered throughout the country might be mentioned. Generally speaking, however, commercial fruit growing is situated S. of a line drawn from the mouth of the Humber on the E. to the mouth of the Mersey on the W. Above this line the climatic conditions are not sufficiently favourable, though the Blairgowrie (Perthshire) district in Scotland probably produces as much as half the tonnage of raspberries produced on the whole of the area devoted to this particular fruit in England and Wales.

In Ireland commercial fruit growing is mainly confined to apples and black currants in a small area in co. Armagh, Ulster.

Import and Home Produce

The home industry in apple growing has not increased as rapidly as the taste of the public for apples, a taste that can be gauged by the rapid increase in the quantity of apples imported annually. This desire for apples has been due in large measure to the enterprise and advertising capacity of those dealing with imported fruit. It must be remembered, however, that imported apples came into this country in very large quantities, whilst the bulk of first-class culinary and dessert apples produced in this country was extremely small. This was before intensive fruit growing commenced to extend rapidly. Gradually, however, as the productive area in these islands has extended more and more, imported fruit has been replaced.

The intensive grower of this fruit is faced with the same difficulties which are being experienced by all industries. Costs have risen rapidly and in greater ratio to the prices obtained for the fruit. It seems certain, therefore, that several of the methods now practised, which were profitable when labour was cheaper, will have to be dispensed with. In fact, in future, cultivated plantations closely interplanted with "soft" fruit will have to give way to plantations more easily cultivated or grass orchards.

The position with regard to plums, cherries, and the "soft" fruits (gooseberries, currants, and strawberries) is somewhat different. These are of a much more perishable nature than apples. The effects of high costs of production are, therefore, felt even more acutely, but besides this there is always the possibility of severe foreign competition from France, Holland, or Germany, whence transport is rapid.

When the British plum crop is heavy, nearly sufficient is produced to satisfy home requirements, and in these years "gluts," or periods of very low prices, often occur, due often to the fruit ripening in larger quantities than the markets can absorb at one time, but sometimes to large quantities arriving from abroad while the markets are already fairly well stocked. The plum acreage in Britain, notwithstanding these setbacks, is extending gradually.

Gooseberries and red currants are the other home-grown fruits, which are also largely imported, and which suffer in some years from gluts due to the supplies being too heavy for the demand.

Fruit Pigeon. Name given vaguely to a number of large, handsomely coloured pigeons, of the



Fruit Pigeon of Oceania, *Carpophaga oceanica*

family Treronidae, which feed mainly on fruit. The beak is so adapted that it can be widely distended at the base in order to swallow fruits whole. Found throughout S. Asia and Australia, these birds do great damage to crops.

Frundsberg, GEORG VON (1473-1528). German soldier. Born at Mindelheim, of noble family, he became a soldier, and saw a good deal of service in Germany and Italy. He is chiefly known for his share in organizing the troops known as Landsknechte, which he led with conspicuous success. His chief exploit was against the French and Venetians in Italy. In April, 1522, he won the battle of Bicocca, and he was present at Pavia; he also served Charles V against the rebellious duke of Württemberg, and in crushing the revolt of the peasants in 1525. He died at Mindelheim, Aug. 10, 1528.



Georg von Frundsberg, German soldier
From an engraving

Fry, CHARLES BURGESS (b. 1872). Athlete, cricketer, and footballer. Born at Croydon, April 25, 1872, he was educated at Repton and Oxford. A good, all-round athlete, he was particularly famous as a cricketer. He gained a triple blue at Oxford, and was captain

of the XI against Cambridge at Lord's in 1894, when he scored a century. He originally played for

Surrey, later for Sussex, and in 1909 for Hampshire. In 1900 he made a total of 3,147 runs, with an average of over 78 per innings. His innings of 232 not out for the Gentlemen v. Players, in 1903, ranks as his best performance. In the test match against S. Africa in 1907 he scored 129, and he was England's captain in the triangular test matches of 1912. For many years Fry held the record for the long jump. He is also an international at Association football. He has written books on cricket, football, and diabolos. He was hon. commander, R.N.R. See C. B. Fry: the man and his method, A. W. Myers, 1912.

Fry, SIR EDWARD (1827-1918). British lawyer. Born Nov. 4, 1827, of a well-known Quaker family, he



Sir Edward Fry,
British lawyer
Elliott & Fry

was educated at Bristol and London University. In 1854 he became a barrister, and by the aid of a work on Contracts, still of high value, and solid legal powers, made his name as a chancery lawyer. In 1869 he became a Q.C., and in 1877 a judge of the court of chancery. He served on the bench with distinction and dignity for fifteen years, first in the chancery court, and after 1883 as a lord justice of appeal.

After his retirement in 1892 he did varied public work. Interested in the question of international arbitration, he was made permanent member of the Hague tribunal, and represented his country at the conference of 1907. Fry presided over two commissions on Irish affairs, one on land, in 1897, and one on university education; acted as arbitrator in trade disputes, and took a leading part in the campaign against secret commissions in business. He died Oct. 18, 1918.

Fry, ELIZABETH (1780-1845). English prison reformer. Born at Gurney Court, Norwich, May 21, 1780, a daughter of John Gurney, Quaker and banker, she was brought up in cultured surroundings, and married Joseph Fry, another Quaker, in 1800. In 1813

Mrs. Fry paid her first visit to Newgate prison. The horror and filth she saw there determined her to devote herself to improving the lot of the prisoners, especially the females, and the rest of her life was spent in this cause.

In 1817 she formed an association for their improvement, and, like Howard, extended her interest to prisons in other parts of Europe. So successful was she that in 1818 she was called before a committee of the House of Commons, and thanked for her work. She died at Ramsgate, Oct. 12, 1845, leaving several children. See *Memoirs, 1847*, ed. by her daughters, and *Life*, by G. K. Lewis, 1910.

Fry, JOSEPH (1728-87). British manufacturer. Born at Sutton Benger, Wiltshire, he was apprenticed to a doctor at Basingstoke. He settled in Bristol, where he soon had a good practice, but his fame rests upon his business enterprises. He founded the business of cocoa and chocolate manufacturers, now the firm of J. S. Fry & Sons, and also became a typefounder. This concern, having been transferred to London, became known as Joseph Fry & Sons, and was responsible for some useful typographical innovations, and printed some Bibles.

Fry was also interested in soap and chemical works. He died March 29, 1787. Like many of his descendants, Fry was a member of the Society of Friends. One of his grandsons was Francis Fry (1803-86), the bibliographer. Other noted members of this family were Sir Edward Fry (*q.v.*); Theodore Fry (1836-1912), an ironmaster, who was made a baronet in 1894, and was M.P. for Darlington from 1890-95; and Lewis Fry (1832-1921), M.P. for Bristol, 1878-92 and 1895-1900.

Fry, ROGER EDWARD (b. 1866). British artist and critic. Son of Sir Edward Fry (*q.v.*) he was educated



Roger E. Fry,
British artist
Elliott & Fry

at Clifton and Cambridge, where he took his degree in science. He then turned to art. He has exhibited frequently, but is better known as co-editor of *The Burlington*



Charles B. Fry,
British athlete
Lafayette

After C. B. Leslie

Magazine, as an authority on Italian Art, and a vigorous apologist of post-impressionism. He is the author of a study of Giovanni Bellini, 1899; *Vision and Design*, 1920; and edited Reynolds's *Discourses*, 1905. In 1908 he was European Art Adviser to the Metropolitan Museum, New York.

Fryatt, CHARLES (1872-1916). British sailor. Born Dec. 2, 1872, he entered the service of the G.E.R.



Charles Fryatt,
British sailor

as an able seaman. In 1904 he became chief officer, obtained his master's certificate in 1905, and in 1913 was promoted captain. When the Great War broke out he was in command of the G. E. R. steamer *Brussels*, and helped to maintain the service between Holland and England. He was attacked and escaped from a German submarine on March 3, 1915, but on the 28th of the same month he was attacked again, and succeeded in ramming the U-boat, an action for which he received the thanks of the admiralty.

Bound from Holland to Tilbury on June 23, 1916, he was captured by a German destroyer, taken to Zeebrugge and thence to Ruhleben. Removed to Bruges, he was tried by a court-martial on July 27, the evidence of his log for March 28 being produced against him, was condemned as a franc-tireur, and shot the same evening. This was an obvious injustice, as Fryatt was wearing uniform and was in government employ.

The matter was raised after the war, and considered by a German commission of inquiry in April, 1919. It upheld the sentence, but expressed regret for the haste with which it had been executed. Fryatt's body was brought to England and buried at Dovercourt, July 9, 1919.

Frýdek. Municipality in Silesia, formerly part of the Austrian Empire, now in Czecho-Slovakia. The town is 16 m. by rly. from Teschen, on the boundary of Silesia. The people make linens; half of them are Czechs, a third Germans, and the rest Poles; most of them are Roman Catholics. Pop. 9,000. Its old name was Friedek.

F.S.A. Abbrev. for Fellow of the Society of Antiquaries.

F.S.S. Abbrev. for Fellow of the Royal Statistical Society.

Fuad or **AHMED FUAD PASHA** (b. 1868). Sultan of Egypt. Born in Cairo, March 26, 1868, he was the



Fuchsia. Leaves and flowers of, left, double fuchsia, and right, single fuchsia

youngest son of the khedive Ismail Pasha and brother of the first sultan of Egypt, Hussein Kamil, whom he succeeded Oct. 9, 1917. He was educated in Switzerland and Italy,

passing through the military academy and the artillery school at Turin, and becoming an officer of the 13th regt. of artillery. He was a candidate for the new throne of Albania, but withdrew in order to devote himself to Egyptian interests. See Egypt.

Fuad Pasha, MEHMMED (1814-69). Turkish statesman. Born at Constantinople, Jan. 17, 1814, he was trained as a surgeon, but entered the diplomatic service in 1835. Having served as secretary at the London embassy, he was sent to St. Petersburg in 1848, and was appointed special commissioner in Egypt three years later. On his return he became foreign minister,



Fuad Pasha,
Turkish statesman

but he served with the army during the Crimean War, and was delegate to the Paris conference of 1856. Grand vizier in 1860, he visited Europe with Abdul-Aziz and was received with distinction in England, to which country he had always shown great friendliness. He died at Nice, Feb. 12, 1869.

Fucechio. Town of Italy, in the prov. of Florence. It stands on the river Arno, 24 m. W. of Florence. Pop. of the commune about 13,000. There was a lake of this name in the prov. of Pisa, but it is now drained.



Fuad,
Sultan of Egypt

Fuchsia. Hardy and half-hardy flowering shrubs, of the natural order Onagraceae. They are natives of Central America, whence they were introduced in 1788. Their colours are all shades and mixtures of white, cream, pink, purple, crimson, and violet. Greenhouse sorts rarely attain a height of more than 2 ft., but in warm open districts, notably Devon and Cornwall, hardy species frequently grow to 10 ft.-12 ft.

Greenhouse kinds are propagated chiefly by cuttings taken in Jan. or Feb., in sandy soil, in a temperature of about 75°, lowering it to 55° until June, when the plants may be put out for summer bedding. The open-air varieties do well in any ordinary rich soil against a wall, and may be planted in autumn or spring. A perfectly hardy and beautiful fuchsia, which may be grown easily in any town garden, is Riccarton's (*F. Riccartonii*). It has bright red blossoms, with violet centres. The shrub takes its name from the German physician and botanist Leonhard Fuchs (1501-66).

Fuchsin. Aniline dye of great commercial importance. Known also as magenta red, roseine, aniline red, rubine, azaleine, harmaline, and erythrobenzine, it was discovered by Natanson in 1856. Hofmann in 1858 and Verguin and Renard Frères at Franc de Lyons in 1859 devised successful commercial processes for its manufacture. The two methods by which it is made are (1) the "arsenic acid melt" process, consisting of the oxidation of a mixture of aniline, orthotoluidine and paratoluidine, known as "aniline for red," with arsenic acid; and (2) the nitrobenzol process, in which "aniline for red" is heated with nitrobenzene, ortho-nitrotoluene, and para-nitrotoluene in the presence of iron and hydrochloric acid. The second is more frequently employed as the yield of fuchsin is slightly larger. See Dyes.

Fucino. Former lake of Italy, in the prov. of Aquila. It is 2 m. E. of Avezzano and is now reclaimed, being the largest lake ever drained by artificial means. With a circumference of about 36 m., a depth of over 60 ft., and an alt. of 2,172 ft., it had no outlet, and was liable to great and dangerous fluctuations in volume. To remedy this the Emperor Claudius, in A.D. 52, had a subterranean tunnel, 3½ m. in length, cut so that the water could be discharged into the river Garigliano (Liris). This fell into disrepair, but Trajan repaired it.

In 1854 the Roman banker, Prince Giulio Torlonia, for the consideration that the land reclaimed

should become his property, undertook to make a new channel. This he did at an enormous expense, and the lake was finally drained in 1876. The reclaimed area of 40,000 acres is laid out in a series of model farms, mainly occupied by tenants of the Torlonia estates.

Fucoid (Lat. *fucus*, seaweed; Gr. *eidos*, likeness). Filamentous structure found in rocks of all ages. They are supposed to be remains of seaweed-like plants, but are probably worm-casts or totally unconnected with any organisms. They are common in Cambrian rocks. See Cambrian System.

Fucus (Lat., seaweed). Genus of brown seaweeds of the natural order Fucales (class Phaeophyceae). They are abundant on all rocky shores in shallow water. They have long, leathery fronds, often exposed for hours at low water, and forming a large percentage of the seaweed gathered for manuring the land. Familiar examples are the bladder-wrack (*F. vesiculosus*) and the saw-edged wrack (*F. serratus*).

Fuegiens. South American Indian tribes inhabiting Tierra del Fuego. The primitive race are the central Yahgans, who use rude wind-shelters, skin aprons, and mantles, and bone and shell implements. They have no canoes. Their kitchen-middens indicate a remote stone-age culture. The western canoe-using Alakalufs are pre-Incan Araucanians. The eastern Onas are Patagonians. See Tierra del Fuego.

Fuego. Active volcano of Guatemala, Central America. It is 45 m. S.W. of Guatemala City and 21 m. W. of the Volcán de Agua. Its snow-capped cone rears to a height of 12,577 ft., and there was an outburst in 1880.

Fuel. Any combustible substance burnt for the sake of the heat evolved in the process. All common fuels contain carbon as their chief constituent, either alone or in combination with hydrogen (hydrocarbons), and the ultimate result of their complete combustion is the conversion of this carbon into carbon dioxide, the hydrogen being similarly oxidised to water.

Fuels may be solid, liquid, and gaseous. Some occur naturally, others are prepared or derived fuels. The most important of all fuels is coal; other natural solid fuels are lignite, peat, wood, and vegetable materials such as straw. Coke is the most important derived solid fuel. Mineral oil is the chief liquid fuel, but though it occurs naturally it is rarely used in the natural state. As obtained from the earth, it contains a large number of



Fuegiens. Indian and his squaw wearing costume of blanketing

hydrocarbons which differ in volatility, and it is found more profitable to separate these into groups or "fractions," and to use each portion in different ways, than to burn the whole mixture. This separation is effected by gradually heating the natural oil, when the substances with the lowest boiling points are volatilised first, followed as the temperature is raised by the less volatile. It is possible to separate a long series of different hydrocarbons, but in practice the process is not carried to such lengths. According to Engler's classification the fraction that distills up to a temperature of about 300° F. consists of petrol and solvent naphthas; the second fraction, up to about 570°, is kerosene or paraffin oil; while the residue is fuel oil.

The distillation of coal and other natural solid fuels, by heating them in closed retorts, also yields oils which vary in quantity and character according to the material and the methods employed; and simultaneously the process yields gas which similarly varies in grade and quantity. Gas issuing from the earth as a natural product is used as a fuel in America.

Pulverised Fuel

Pulverised fuel, consisting of powdered coal carried in a stream of air, behaves in many ways like a gaseous fuel; it is commonly used for firing cement-burning kilns, and has been applied to metallurgical furnaces and steam boilers. Another method of using powdered solid fuel is seen in colloidal fuel, to which a good deal of attention was paid in America during the later years of the Great War. Here finely divided coal or other carbonaceous matter is suspended in heavy mineral oil or in the tar or tar-products derived

from the distillation of coal, various methods of treatment being employed to secure that the particles do not settle out.

The two most important natural fuels—coal, which consists of the fossilised or mummified remains of vegetation that grew ages ago; and mineral oil, which is generally supposed to have been formed from marine vegetable or animal organisms that also lived in the distant past—represent stores of accumulated energy derived from the sun. There is little or no reason to suppose that the formation of either coal or oil is going on at the present time, and therefore in using them we are living on capital that cannot be replaced. Some of the less important natural fuels, such as wood and straw, do, however, represent a present means of accumulating solar energy, and the same is true of alcohol, which can be made from vegetable growths such as grain and potatoes, and which in the future may play a great part.

Power from Fuel

Large quantities of fuel are burnt so that the heat may be converted into mechanical power, or as a second stage into electricity. The plan commonly adopted in obtaining power from coal is to raise steam in a boiler to drive an engine or turbine. Some of the heat is lost up the chimney in the heated gases of combustion—if these gases were not hot there would be no "natural" draught, though one might be produced mechanically by a fan—but a good boiler properly managed will transfer 80 p.c., or even more, of the heat to the water in the boiler. In the steam engine more heat is necessarily lost, and the final result is accounted good if about 20 p.c. of the original heat in the coal is obtained in the form of power.

The manifest wastefulness of this method of producing power from coal has led to the consideration of other possibilities. When coal is carbonised or distilled, its decomposition produces gas, coke, tar, and ammonia—which are either useful in themselves or by appropriate treatment can be made to yield a great number of valuable substances. In the high temperature of the furnace of a steam boiler these products are burnt up and lost. The question thus presents itself whether it is possible to get more out of the coal by conserving these products while still obtaining power.

An ordinary gasworks offers one example. Every ton of coal put through its retorts yields about 13 cwt. of coke, and say 12,000

cubic ft. of gas, from which are extracted, before it is passed into the mains for distribution to the consumer, tar and ammonia. Power can then be obtained from the gas (and more gas can be made from the coke, if desired) by using it to drive gas engines, while the other products remain to be worked up into fertilisers, dyes, drugs, and other things. In usual gasworks practice the carbonisation is carried out at comparatively high temperatures (up to 2,300° F.), but if lower temperatures are employed (down to 750° F.), the products are different in quantity and quality. The residue "soft" coke, containing more volatile matter, is more suitable as a domestic fuel than the hard coke from coke ovens and gasworks retorts, while there are light and heavy fuel oils that can be used for the production of power in internal-combustion engines.

Another plan is to pass air and steam over incandescent carbon, and to use the resulting "producer" gas in gas engines. A producer can be fitted with apparatus for recovering ammonia, the sale of which will meet a substantial part of the fuel bill. It is also possible to improve the result by employing the heat of the exhaust to generate steam in a waste-heat boiler, and using this steam in a turbine. In this way the proportion of the heat of the coal converted into power may be raised to 25 p.c., but on the other hand the plant becomes more complicated and expensive.

The relative advantages of these different methods must be estimated according to the circumstances of each particular case. Economy of heat does not necessarily mean saving of money; the cost of the plant required to secure the heat economy may swallow up all the advantage. If production of power on a large scale is the object in view, the coal-fired steam boiler with steam turbine is the simplest arrangement, and may be the cheapest, even allowing for the revenue derived from the sale of the products recovered with any carbonisation process. See Coal; Oil.

Fuente Ovejuna. Town of Spain, in the prov. of Cordova. It stands on an eminence in a fertile district, 45 m. by rly. N.W. of Cordova, and is encompassed by ramparts. It trades in honey, wine, fruit, grain, and cattle; and leather, bricks and tiles, preserved meat, and soap industries are carried on. A stock fair is held yearly. Near by are silver and lead mines, and stone quarries. Fuente Ovejuna is reputed to be the ancient Mellacia, famed for its honey. Pop. 13,470.

Fuenterrabia. City of Spain, in the prov. of Guipuzcoa. It stands on a peninsula, near the mouth of the river Bidassoa, 10 m. E.N.E. of San Sebastian on the Paris-Madrid Rly. It is a picturesque old-walled town, with a 10th century castle, narrow streets, and curious houses. The modern part, facing the estuary, is coming into vogue as a summer resort, with fishing quarters and industrial suburbs. Ropes, fishing nets, and paper are made, and there are also flour and saw mills.

Fuenterrabia was taken several times by the French, but its most noted siege was in 1638, when the French under Condé were defeated here. To celebrate this event a festival is held every year on Sept. 8. It was opposite Fuenterrabia that Wellington crossed the Bidassoa, Oct. 8, 1813. Pop. 4,976.

Fuentes d'Onoro, BATTLE OF. Fought in the Peninsular War between the English and the French, May 3 and 5, 1811. Fuentes is a village in the prov. of Salamanca, Spain. It stands on a hill, near the Portuguese frontier, 15 m. by rly. S.W. of Ciudad Rodrigo. The battle was fought because Wellington was blockading that fortress, and the French, under Masséna, were marching to relieve it. Although inferior in numbers, Wellington decided to fight, and he drew up his 32,000 men behind a stream flowing through a deep ravine. One French division attacked on the 3rd, and there was some savage fighting around the village, but at the end of the day practically no ground had been won or lost.

A day intervened, and then, with about 40,000 infantry and 5,000 cavalry, Masséna made his great attack on the 5th. His intention was to turn the British right, but, foreseeing this, Wellington extended his front until it was seven miles long. There was some fighting, infantry and cavalry mingled in a confused encounter, the British in general being worsted. Gradually, in spite of great gallantry, they were forced back, and, as desired, the right was turned, and the 7th and light divisions, that had borne the brunt of this attack, were separated.

To prevent, therefore, a more serious disaster, a new front was

decided upon. The 7th division crossed the river Tirones, while the light division resisted the on-



Fuenterrabia, Spain. The walled fortress which guarded the entrance to the old city

coming foe, squares of infantry slowly retreating before surging masses of horsemen. At length the new line was formed and an artillery duel ensued. Meanwhile, there was a terrific battle in Fuentes itself, where the houses were used to good purpose. From part of this the few British troops were driven, but, strongly reinforced, they managed to keep to some of their positions until the evening, when the battle ended without a decision. The English and their Spanish auxiliaries lost about 1,500, including 300 prisoners; the French casualties were somewhat less. See The War in the Peninsula, Sir W. F. P. Napier.

Fuero (Lat. *forum*). Spanish word meaning a code of laws, or set of privileges, something like the English charter. The Spaniards had many of these fueros, the most important being the Fuero Juzgo, the national code of Castile, taken from the Visigoths, but several times revised. It was not known at first as a fuero, for the word only came into use in the 10th or 11th century, the first fuero being probably the one granted to Leon in 1020. There were various local and municipal fueros, by which towns and provinces enjoyed certain privileges, such as the right to choose their own overlord. The three Basque provinces had fueros which made them largely self-governing until 1876, when these privileges were taken away. Portuguese towns had also their fueros. See Charter.

Fuerteventura. One of the Canary Islands. It lies S.W. of Lanzarote and N.E. of the Grand Canary; area 664 sq. m. Mountainous and barren, it has only two fresh-water springs, and suffers from prolonged periods of drought. The inhabitants are mostly fisher-

folk. The capital is Santa Maria de Betancuria, and Cabras is the chief port. Pop. 12,960.

Fugger. Name of a German family of merchants. Johann Fugger, its founder, settled in Augsburg about 1370. A weaver from the neighbourhood, he soon became a merchant and a citizen. His son and grandsons carried on his business of merchants and money-lenders and became very rich.

Jacob Fugger (1459-1525) was perhaps the most notable member of the family. With his brothers he had mining, banking, shipping, and other interests nearly all over Europe, became the banker of the Hapsburg family, and found the money which secured the imperial throne for Charles V in 1519. His nephew Anton took advantage of the discovery of America to add to his wealth, while the family, among other ventures, farmed the silver and the quicksilver mines in Spain that belonged to Charles V.

The succeeding members were less interested in business, but remained personages of wealth and importance. They were divided into various branches; some entered the Church, at least two becoming bishops; others were soldiers; others scholars and patrons of art. Three branches of the family exist to-day, and before the changes of 1918 the head of each was a member of the Bavarian Upper House. One Fugger was made a prince in 1803; the others are counts. There are several memorials of the Fuggers in Augsburg, including the Fuggerei. See Augsburg.

Fugitation (Lat. *fugitare*, to flee). Term used in Scots law for the act of declaring a person a fugitive from justice. If a person charged with a crime fails to appear to answer the charge, he can be declared outside the law. His goods then become the property of the crown.

Fugitive Offenders Act, 1881 (Lat. *fugitivus*, runaway). Law operative throughout the British empire. By it a person accused of having committed a crime in any part of the king's dominions may be arrested in any other part and sent back to the place where he is wanted. The Act only applies to offences punishable by imprisonment with hard labour for 12 months or more. See Extradition.

Fugitive Slave Laws. Two laws of the U.S.A. providing for the recovery of runaway slaves. The first, passed in 1793, enabled the owner of a slave who had taken refuge in a non-slave state to recover his property on application to a magistrate for a warrant. As the anti-slavery feeling grew in

intensity in the northern states the Act was evaded or nullified by the passing of state laws forbidding state officials to assist in enforcing this law of the federal government. As a result of insistent demands from the slave-owning states, a new law was passed in 1850, by which the obligation was imposed on federal officials to enforce the law. See Slave Trade.

Fugleman (Ger. *Flügel*, a wing). Corruption of *Flügelmann*, i.e. a soldier on the wing of a body of troops. At drill he advanced in front of the line to give the time in the exercises with the musket.

Fugue (Fr. from Ital. *fuga*, flight). Important form of contrapuntal music akin to the round and canon (*q.v.*), but much more free. Here are only given definitions of

from that of the exposition. An episode is a free section introduced as a relief from the stricter portions of a fugue. A stretto contains entries of subject and answer at shorter time-intervals than at first.

A pedal, a long sustained note, usually the dominant or tonic, often accompanies the stretto, and is also used independently.

Bibliography. Fugue, and Fugal Analysis, E. Prout, 1892; Fugue, James Higgs, 1877; Dictionary of Musical Terms, Stainer and Barrett, 3rd. ed. 1888.

Fujiyama, FUSIYAMA OR FUJISAN. Loftiest peak in Japan, on the island of Honshiu. Alt. 12,390 ft. A dormant volcano, with a beautiful snow-capped cone, it occupies a position of splendid isolation, 60 m. S.W. of Tokyo. According to

tradition it was upheaved during one night in 285 A.C., and at the same time a depression was caused near Kioto, which is now occupied by Lake Biwa (*q.v.*). Its crater, nearly 3 m. in circumference and over 500 ft. deep, is now filled with water.

The last recorded eruption happened in

1707-8. The sacred mountain of Japan, it is annually visited by thousands of Buddhist pilgrims, who ascend to the summit to pray at the numerous shrines. It is frequently portrayed on Japanese pottery, and is a favourite theme with poets and artists. See Cone.

Fukui. Town of Japan, on the island of Honshiu. It is the seat of the prefecture of Fukui, and stands on both banks of the river Ashiwa, 80 m. N.N.E. of Kioto. It has thriving silk and paper industries, and is an educational centre. There are several other towns of this name in Japan. Pop. 58,100.

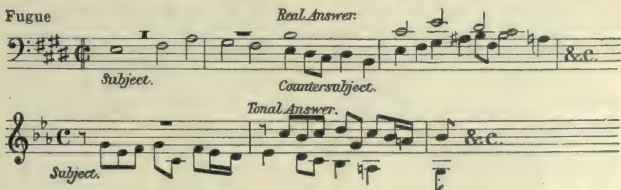
Fukuoka. Town of Japan, on the island of Kiushiu. It stands at the head of a small stream on the N. coast, 86 m. by rly. N.N.E. of Nagasaki. Its suburb, Hakata,



Fujiyama. The famous mountain of Japan viewed from Omiya village

the chief terms used in connexion with fugue-form, readers being referred to musical works for full elucidation. The subject is the chief theme, announced by all the voices or parts in turn, but it is called the answer when it has the dominant as its key-centre instead of the tonic; the answer is called real when it is an exact transposition of the subject, or tonal when certain modifications take place in order to avoid a too great divergence from the original key. The countersubject is the counterpoint which accompanies later entries of subject and answer. The first complete set of entries of all the parts is the exposition. Subjects are sometimes inverted, augmented, or diminished.

A counter-exposition is a further set of entries in a different order



is on the opposite shore of the stream. There are several good streets, a citadel, and a public garden. It is noted for its silk industry. The town is the seat of the prefecture of Fukuoka. This name is borne by several other towns in Japan. Pop. 101,100.

Fukushima. Town of Japan, on the island of Honshu. It is 84 m. S.E. of Niigata and 170 m. by rly. N.N.E. of Tokyo. Its principal trade is connected with silk and silkworm cocoons, which are exported in large quantities. Pop. 31,700.

Fukushima, BARON (1853-1919). Japanese soldier. Entering the Japanese army as a drummer-boy, he studied at Tokyo University, and joined the general staff in 1875. Attaché at Peking, 1882-84, he was transferred to Berlin, 1887-92. In 1892-93 he accomplished a 9,000-mile horseback ride from Berlin to Vladivostok by way of Russia and Siberia. He was sent on missions to Egypt, Turkey, Persia, Caucasus, Arabia, India, Burma, and Siam, 1895-97. General staff officer in the Manchurian army during the Russo-Japanese war (1904-5), he became chief of the staff in 1906. In 1912 he became governor-general of Kwang-tung. Died Feb. 18, 1919.

Fukuyama. Seaport of Japan, on the island of Hokkaido. It stands at the S.W. extremity of the island, 53 m. S.W. of Hakodate. Formerly the most important seaport of Hokkaido, its trade has declined, and most of its commerce has been transferred to Hakodate, now the premier port. There are numerous temples and shrines, and the town was once the chief residence of the lords of Matsumai. There is another town of the same name on the S. coast of Honshu. Pop. 15,000.

Fula (Mandingan, reddish). Dominant African people in the W. Sudan, the plural being Fulbe

and the Hausa name Fulani. Estimated at 8,000,000, and descended from an early admixture of Libyan—if not pre-Libyan—and negro stocks, they are handsome, oval-faced, chestnut-hued, straight-nosed, thin-lipped, and curly-haired, with no negro odour. In the 7th century they were still in the uplands S. of Morocco; by the 13th they were cattle-owning nomads, partly Islamised, in Bornu; by the 16th they reached Lake Chad, and, after founding the Sokoto kingdom (1807-1903), with much Hausa intermingling, are now a virile stock, three-fourths Caucasian, dwelling from the Atlantic coast to the Nile valley.

They are compact in Futa Jallon, dominant in Sokoto and Gando, where many have adopted settled husbandry, and colonist in Bornu, Baghirmi, and Wadai. The ruling Mahomedan aristocracies are aggressive and intelligent, with many mosques and schools. The cow-Fulani or Bororoje are peaceable booth-dwelling nomads. The most easterly tribes are hostile to Islam. See Africa: Languages.

Fulcrum (Lat. *fulcrum*, a prop). Fixed point in the mechanical system of a lever about which the lever can rotate. See Lever.

Fulda. City of Germany, in the Prussian prov. of Hesse-Nassau. It stands on the Fulda, 69 m. N.E. of Frankfurt. The chief ecclesiastical building is the cathedral, an 18th century edifice, modelled on S. Peter's at Rome, with the crypt of an older edifice. The church of S. Michael is an interesting old building, and there is the church of S. Severus, dating from the 15th century, and a convent, now a college. Secular buildings include the château, the town hall, and the library, with a large and valuable collection of books and MSS. There are two squares and a public park. The industries include the manufacture of textiles, rly. shops, and a trade in cattle and agricultural produce.

Fulda is noted for its abbey, round which the town grew. This was founded by S. Boniface in 744, and was soon one of the greatest Benedictine houses in Germany. It was very rich; its abbot became a prince and a bishop, ranking as one of the great prince-bishops and ruling a territory of some size. This was secularised in 1802, and, after belonging to various princes, was divided between Hesse-Cassel and Bavaria. Most of it is now Prussian. From 1734 to 1804 there was a university here. Pop. 17,500.

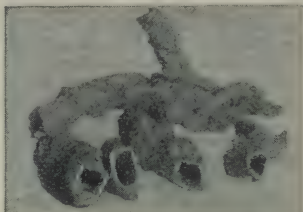
Fulda, Ludwig (b. 1862). German dramatist. He was born at Frankfort-on-Main, and at the age

of 20 wrote his comedy *Die Aufrichtigen*. This was followed by other similar works, and in 1893 he would have gained the Schiller prize with *Der Talisman*, a fairy tale, had not the emperor vetoed the grant. His principal plays were *Kaltwasser*, 1903; *Aus der Werkstatt*, 1904; *Der Heimliche König*, 1906; *Herr Aladdin* and *die Wunderlampe*, 1912.

Fulgurites (Lat. *fulgur*, lightning). Tubes formed in sandy soil, and less commonly in rocks, by



Ludwig Fulda, German dramatist



Fulgurites. Specimens obtained at Maldonado, Uruguay

passage of lightning. This often penetrates to a depth of many feet, fusing the particles it encounters. The glassy lining often produced in tubes varies in size to more than 2 ins. in circumference. They are common on Mt. Ararat, the Alps, Pyrenees, and in Mexico and La Plata.

Fulham. Metropolitan bor. and parish of the cc. of London. On the Middlesex side of the Thames, S.E. of Hammersmith, it has been a parish since 1631 and a met. bor. since 1899. Its oldest building is Fulham Palace, the ancient manor house of the bishops of London, the courtyard of which belongs to the time of Henry VII. During the bishopric of Frederick Temple a part of the grounds now called Bishop's Park was opened to the public. The parish church of All Saints, a Perpendicular structure, rebuilt 1880-81, near Putney Bridge, has a 14th century tower, an organ by Jordan, 1700, a fine peal of bells, and some old monuments.

Well served by motor-buses and the Underground and W. London Extension Rlys., Fulham has a town hall, free library, an old pottery, and contains the grounds of the Chelsea and Fulham football clubs, and those of the Hurlingham club. Among eminent names associated with the district, which includes Parson's Green and Walham Green, are those of Addison, Bartolozzi, Burbage and Con-dell, Sir T. Bodley, John Florio,



Fula. Women of the Fula race from Timbuctoo



E. Burne - Jones, Lord Lytton, Theodore Hook, and Samuel Richardson. Two members are returned to Parliament. Pop. 153,284. See History of Fulham, T. Faulkner, 1813; A Walk from London to Fulham, T. C. Croker, 1860.

Fulham Ware. Fine stoneware first produced in 1671 by John Dwight (q.v.) at Fulham. It was

an imitation of china, semi-transparent, with hard, close body of grey colour. Jugs, pots, bottles, butter dishes, and busts were produced. The enamel was brilliant, the colours being largely blue and purple. The decorations of flowers and leaves were raised. Marbled pieces were also produced. Dwight gave up in 1746, and was succeeded by White until 1762. The factory is still carried on, stoneware jugs and pots being produced.

Fulham Ware. Figure of Jupiter by John Dwight
Liverpool Museum

duced. In 1888 William De Morgan began the manufacture of quaintly shaped pots and pans in lustre ware.

Fuller. Person whose occupation is to full cloth, or carry out a finishing process by which cloth is thickened and shrunk. The term is also applied to a tool used by blacksmiths for shaping iron by forcing it into grooves.

Fuller, LORE. American actress and dancer. Born at Chicago, she made her first appearance on the stage at the age of two and a half. Later she toured with various

stock companies in America, making her debut at New York in 1886. Her first appearance on the London stage was



Fulham. Courtyard of Fulham Palace, in Tudor style. Above, part of the 18th century buildings of the Palace

in 1889, when she played the part of Mercy Baxter in *Caprice at The Globe*. Her greatest success was, however, in 1891 at the Columbus Theatre, New York, where she introduced the Serpentine dance. Her reminiscences, *Fifteen Years of My Life*, appeared in 1908, followed by *Fifteen Years of a Dancer's Life*, 1913.

Fuller, THOMAS (1608-61). English divine and eccles. historian. Born at Aldwinkle, Northants. where his father was rector, and educated at Cambridge, he shared the reverses of the Royalists during the Civil War. In addition to private chaplaincies and lectureships, he held at various times the curacy of S. Bene't's, Cambridge, the rectory of Broadwindsor, Dorset, the curacy of Waltham Abbey, and the rectory of Cranford, Middlesex; but from 1642 till his death depended largely upon his pen for subsistence.



Thomas Fuller, English divine

Fuller was the first to follow Bede in attempting to write the ecclesiastical history of England, his *Church History of Britain*, a folio of 1,300 pages, being published in 1655. His *History of the Worthies of England* was issued in folio in 1662. Witty and learned, he was happily described by A. Jessopp, who in 1892 published a selection from his writings, as the Sydney Smith of the 17th century. He

died in London, Aug. 16, 1661, and was buried at Cranford. See *Life*, M. Fuller, 1886.

Fuller-Maitland, JOHN ALEXANDER (b. 1856). British musical critic. Educated at Westminster School and Trinity College, Cambridge, he became musical critic for *The Pall Mall Gazette* and *The Guardian*, and later served *The Times* in the same capacity for many years. He wrote several historical and biographical works, including *Masters of German Music*, 1894, and *English Music in the 19th Century*, 1902, and edited *Grove's Dictionary of Music and Musicians*, 1904-10.



J.A. Fuller-Maitland, British musical critic
Russell

Fuller's Earth. Soft, earthy variety of clay, greenish, brownish, or yellow in colour. Chemically a hydrous, aluminous silicate, it falls to powder on immersion in water. It is found in the Lower Greensand and in Jurassic strata. The geological stratum known as fuller's earth occurs between the Inferior Oolite and Great Oolite in Jurassic series, and extends from Dorset to Gloucestershire. There are also extensive deposits in N. America. It is so named from its use by fullers as a grease absorbent, and is now used in many cleansing preparations and soaps and in the filtration of mineral oils.

Fulling. Process of cloth finishing also known as milling. The operation, which is one of considerable antiquity, was originally carried out by treading on the wet cloth with the feet, but is now conducted in a machine. The cloth is saturated with soap and water, twisted rope-like, and passed between vertical rollers, the object being to shrink the cloth in the direction of the weft. The wet cloth is then cuttled, i.e. stored in an enclosed space, when it shrinks in the direction of the warp. During the process of fulling a piece of wool fabric shrinks to about half the length and half the width. All resemblance to woven fabric is gone, the cloth assuming a felted appearance. The change is caused by the interlacing of the wool fibres.

Fulling is carried out on woolen cloth to be used for overcoats and heavy suits, and increases the warmth of the clothing as well as rendering the cloth comparatively impervious to moisture. See *Wool*.

Full Score. Extended score of a musical composition showing the parts for various voices and instruments on separate staves, for a conductor's guidance or a student's information. Many different arrangements have been used, but the following is the plan of a typical modern score. The names in roman type show the instruments of the classic orchestra, those in italics are the modern additions or more rarely used instruments.

WOODWIND.—*Piccolo*, Flutes, Hautboys, Clarinets, Bassoons, *Double Bassoon*.

BRASS.—Horns, Trumpets, Cornets, Trombones, *Bass Tuba*.

PERCUSSION.—Kettle Drum, *Side Drum*, Triangle, *Bass Drum*, Cymbals.

STRINGS.—Harp, Violin I, Violin II, Viola (Voices, if any, on separate staves), Violoncello, Double Bass, Organ.

Fulmar Petrel (*Fulmarus glacialis*). Sea bird common in the Hebrides and St. Kilda. These petrels are usually grey on the back, and white below, and measure nearly 20 ins. in length. They commonly follow whaling ships to feed on the refuse blubber, and nest on grassy slopes among the cliffs.

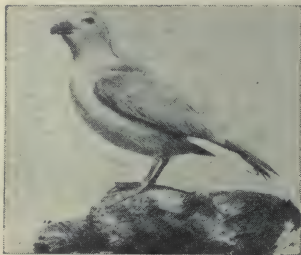
Fulminate of Mercury (Lat. *fulminare*, to lighten, thunder). Sensitive and violently explosive compound used for the initiation of high explosives. Discovered by Howard in 1799, it has the composition $HgC_2N_2O_8$. Owing to its sensitive nature little was done with it for some years, but by 1815 it was utilised for percussion caps.

It is manufactured by dissolving mercury in strong nitric acid and adding this whilst warm to a large quantity of ethyl alcohol in a glass flask, from which the fumes pass to condensers. Shortly after the ingredients have been mixed reaction commences, and if it should be too violent is modified by the addition of more alcohol. About half an hour after the start, fulminate is deposited from the solution as fine crystals, and when all reaction is over the liquid is decanted off and the product washed free from acid, and stored under water until required for use. Occasionally fulminate is stored in a moist condition, but never dry, as it is decidedly less sensitive when it contains at least 12 p.c. of water.

Fulminate of mercury is a fine crystalline powder, white to grey-brown in colour, and has a density of 4.42. It has a sweetish metallic taste and is very poisonous. It is detonated by very moderate friction or percussion, by heating to about 150° C. or by contact with strong sulphuric acid. If unconfined, small quantities burn violently when ignited, but two sheets of paper confine it sufficiently to

cause violent detonation. Its most remarkable and useful property is its ability to cause the detonation of other explosives, and it is doubtful whether without the use of fulminate such high explosives as nitroglycerine, gun-cotton, picric acid, trinitrotoluene, etc., would ever have become commercial possibilities. See Detonator; Explosives.

Fulminic Acid. Dibasic acid which has not been obtained in the free state. It was prepared combined with mercury, as fulminating mercury, by Howard in 1800, and



Fulmar Petrel. A native of the Hebrides and north coast of Scotland

Liebig in 1822 showed that the mercury is combined with a peculiar acid which he named fulminic acid.

Fulnek. Town of Czechoslovakia in Moravia, formerly in Austria-Hungary. In the administration of Olmütz, it is 17 m. S. of Troppau. It has a cathedral church of considerable architectural merit and a Capuchin convent. It was for many years the centre of the Moravian Brotherhood, and in this connexion gave its name to Fulneck, their settlement in the W. Riding of Yorks.

Fulton. City of New York, U.S.A., in Oswego co. Standing on the Oswego river and canal, it is 25 m. N.W. of Syracuse, and is served by the New York Central and other rlys. Settled in 1792 and incorporated in 1835, it was chartered as a city in 1902, when Oswego Falls was annexed. Pop. 13,303.

Fulton, ROBERT (1765–1815). American engineer. Born in Pennsylvania and poorly educated, in



Robert Fulton, American engineer
After Benjamin West

his youth he showed talent as a painter, and crossed to London, where he studied under Benjamin West. Abandoning art for engineering, in 1794 he invented various improvements for the canal systems, and two years later went to Paris, where he turned his attention to

the adaptation of the steam engine for marine purposes. An experiment in 1803 answered all his hopes, and in 1807 he constructed a larger vessel, the *Clermont*, in New York, whither he had returned the previous year. This vessel was followed by the steam frigate *Fulton*, in 1814. He died Feb. 24, 1815. Though not the inventor of marine engines, *Fulton* was the first to apply steam successfully to navigation. See Robert Fulton and Steam Navigation, T. W. Knox, 1886.

Fulvia. Mistress of Curius, one of the ringleaders in the conspiracy of Catiline against the Roman republic in 63 B.C. It was she who divulged the plot to the consul Cicero. She is not to be confused with the *Fulvia* who was the wife, first of Clodius, and later of Antony.

Fulwood. Urban dist. of Lancashire, England. It has a station on the L. & Y. Rly., and barracks. It is within the parliamentary borough of Preston. Pop. 6,578.

Fumariaceae (Lat. *fumus*, smoke). Natural order of annual or perennial herbs. They are natives of temperate and warm regions of the N. hemisphere; also of S. Africa. They have tender divided leaves and small irregular flowers in sprays; the four petals forming two unequal pairs. The watery juice is acid. See Fumitory.

Fumaric Acid. Solid dibasic acid somewhat widely distributed throughout the vegetable kingdom, notably in fumitory (*Fumaria officinalis*), Iceland moss (*Lichen islandicus*), and various fungi. It is best prepared by heating malic acid (*q.v.*) at 150° C. in a current of air so long as water distils over. The residue is washed with a little water and dried at 100° C. It forms normal and acid fumarates with the alkali metals.

Fumarole (Lat. *fumariolum*, smoke-hole). Vapour-vent in volcanic districts, which acts as a funnel for the escape of gas. Many are formed during eruption of such volcanoes as Vesuvius and Etna. They were first studied by R. W. Bunsen in Iceland. See Volcano.

Fumigation (Lat. *fumigare*, to smoke). Term used for the cleansing or disinfecting of rooms, clothing, furniture, etc., by means of certain vapours. Fumigation may be for the purpose of the removal of objectionable odours or for prevention of contagious diseases.

In gardening, fumigation is the process of destroying greenfly and other greenhouse pests by means of smoke. Where the contents of a house generally are affected it is usual to ignite a quantity of tobacco paper, or other proprietary

fumigating preparations, in the interior, and leave the house hermetically closed for about an hour. After the house has been ventilated the plants should be removed, and the interior of the house washed with carbolic soap, while the plants and pots should be thoroughly syringed in the open air with rain water before being replaced. A simple method of fumigating a few plants is to fill a pipe with strong tobacco, set it well alight, place a piece of muslin over the bowl, and blow hard through the stem with the bowl of the pipe close to the infested plants. The cloud of smoke thus produced will suffocate the greenfly. See Disinfection; Sanitation.

Fuming. Property possessed by some liquids of emitting fumes on exposure to air. Fuming sulphuric acid, a solution of sulphur trioxide in sulphuric acid, gives off dense white fumes when air is admitted to the bottle containing the acid. Libavius's fuming liquor is solution of tin tetrachloride, whilst Boyle's fuming liquor contains ammonium polysulphides.

Fumitory (Lat. *fumus terrae*, earth-smoke). Small genus (*Fumaria*) of annual or perennial herbs of the natural order Fumariaceae. Natives of Europe and Asia, they hang on the borders of cultivation. The leaves are much divided into slender segments, and the small flowers are in terminal sprays. Common fumitory (*F. officinalis*), the best known species, has delicate, much-divided leaves and small rosy-purple flowers. The name is variously explained as due



Fumitory. Flowers and foliage of *Fumaria officinalis*

to its fancied resemblance to smoke curling upwards, to its being engendered from a coarse vapour rising from the earth, and to the irritant effect of the plant's juice on the eyes.

Funabashi. Town of Japan, on the island of Honshiu. It stands on the Bay of Tokyo, 11 m. E. of the city of Tokyo. Pop. 12,500.

Funchal. Capital of Madeira, an island in the Atlantic, belonging to Portugal. It stands on Funchal Bay, on the gentle ascent of some hills in the form of an amphitheatre, and as seen from the sea is very beautiful, with its houses of dazzling whiteness, embosomed among tropical verdure. The principal residents have their country houses on the encircling hills. Funchal has a salubrious climate, is well provided with water, and is a popular winter health resort. It has a cathedral, Anglican and Presbyterian churches, hospitals, museum, theatre, casino, meteorological observatory, wireless telegraphy station, and cable communication with Lisbon, Falmouth, and Pernambuco.

The streets, which are steep



Funchal, Madeira. View of the town and harbour from the north-east

and narrow are electrically lighted, and have no wheeled traffic, ox-sleds being used. There is a large trade in wine and coal. In the roadstead is a steep black rock crowned by a castle. Funchal was bombarded by German submarines on Dec. 3, 1916, and Dec. 12, 1917. Pop. 24,687.

Funck-Brentano, THÉOPHILE (1830-1906). French author. He was born in Luxembourg, and after a period of study in law and medicine became professor at the school of political science in Paris. He was the author of a number of works on philosophical subjects, including *La Civilisation et ses Lois*, 1876; *L'Homme et sa destinée*, 1895; and *Les Sophistes Français*, 1905. His son Franz (b. 1882) was appointed to the chair of comparative legislation at the Collège de France in 1900, has lectured in the U.S.A. and Canada, and has written several volumes on the romantic side of French history, among them *Légendes et Archives de la Bastille*, 1898, of which a 5th edition was issued in 1902; and a book on the Diamond Necklace (q.v.) mystery, of which an English translation appeared in 1911.

Function (Lat. *functio*). Term used in mathematics. One quantity is said to be a function of another

when, for any particular value of one, there is a corresponding value or set of values of the other. This may be made clear by a simple example. If a train travels at 50 miles an hour, then the distance travelled is a function of the time, i.e. in six hours the distance travelled is 6×50 miles, in 10 hours 10×50 miles, and generally in n hours $50n$ miles.

This is the simplest example of a function, but there occur many complicated functions in mathematics, and the expression relating one with another, or the function with its argument, as it is called, is generally given in the form $y=f(x)$, or $v=f(x, y, z)$, and so on.

The term function is due to Liebnitz (1692), who divided functions into algebraic and transcen-

dental, the former being those functions which may be expressed by elementary algebraic operations, the latter the remainder. See Algebra; Mathematics; consult also Theory of Functions, A. R. Forsyth, 3rd ed. 1918; Theory of Functions of Real Variables, E. W. Hobson, 1907; Applications of Elliptic Functions, A. G. Greenhill, 1892.

Functional Disorders. Pathological conditions in which the functions of muscles, limbs, or organs are disturbed without any apparent organic basis, i.e. no change can be detected in the anatomical structure of the muscles or nerves affected. See Hysteria; Neurasthenia.

Funds (Lat. *fundus*, bottom). Word meaning a sum of money or supply of credit. A fund is a sum set apart for some special purpose, e.g. an endowment fund or a building fund. In the plural the word has the special meaning of government securities, consols, etc. A fundholder is one who possesses such, and to fund part of the national debt is to turn it from a temporary into a permanent security, i.e. to turn treasury bills into consols or war loan, which is then known as the funded debt. See National Debt.

Fundy, BAY OF. Extension of the N. Atlantic Ocean, dividing Nova Scotia from New Brunswick. It terminates in two branches, the northern section being known as the Chignecto Channel, and the southern as Minas Channel, which leads to Cobequid Bay. From Grand Manan Island, which stands at the entrance of the bay, to Cape Chignecto, its length is about 100 m., and its mean breadth 35 m. Several rivers drain into the bay, the chief of which are the St. John and the St. Croix.

Except for the fogs which drift into the bay in summer from the Gulf Stream, the bay is easily navigable, the coasts are rocky, and the ceaseless tidal scour prevents the accumulation of sandbanks; the tides themselves are swift but regular. Spring tides are high; they range from 27 ft. at St. John to 50 ft. in Minas Channel; wherever a river estuary is narrow the tide makes a bore, usually from 4 ft. to 6 ft. high.

Funen OR FYEN. Island of the Baltic Sea, forming part of Denmark. It lies between Jutland and Zealand, ranking next to the latter in size, and is separated from Slesvig by the Little Belt, and bounded E. by the Great Belt. Length, 52 m. by 42 wide; area, 1,133 sq. m. Mostly flat, and much indented, it rises in the S.W. to some 400 ft. Well watered by the Odense and other streams, it is very fertile, producing fruits, cereals, flax, hemp, timber, cattle, and horses. The chief towns are Odense (*q.v.*), the capital, Svendborg, and Nyborg. Pop. 252,288.

Funeral (low Lat. *funeralia*, things belonging to a funeral). Comprehensive term, at one time written in the plural, for the ceremonies, etc., attending the conveyance of a dead person to grave or tomb. The term obsequies, often used in the same connexion, has not quite the same meaning: funeral means a mournful ceremony, especially the processional part of it; obsequies, a respectful valediction. See Burial Customs.

Funeral Rites. Ceremonial observances attending the actual disposal of the dead. The time intervening between death and the funeral rite may be a few hours, several months, or—as with eminent Burmese monks—more than a year. Interment often occurs at night, as in ancient Greece and Rome, to avoid polluting the sunlight, or at sunset, to prevent the ghost from capturing living shadows. Basuto graves, dug after dark, are filled in before dawn awakens the children. Salutation of the corpse occurs in E. Europe;

in Hungary, kissing of the right hand accompanies appeals for forgiveness. In modern Britain, the dead are sometimes touched to prevent future haunting.

The place of sepulture may be indicated by omen; the Laos carry the dead into the jungle, and halt when sensible of increased weight. Bodies may be carried through smoke-holes or apertures in the house walls. Carrying out feet foremost ranges from Torres Strait to modern Europe. Chams turn the bier about and bear it along zigzag paths to circumvent the ghost and impede its return. Borneo Iban obliterate the bearers' footprints;



Bay of Fundy. Map of inlet of the Atlantic between Nova Brunswick and Nova Scotia

in the Congo basin thorns are strewn after the procession. Crossing water is symbolised among the Koryak by lines across the path, leaped by returning mourners. Attendants in Arctic lands pace thrice round the body, and in the Hebrides thrice round the church, to protect the living from the dead.

The last pilgrimage is facilitated by various observances. The face may be turned towards sunrise, sunset, Mecca, or the tribal cradleland. Coins are provided for the ferryman, honey-cakes for Cerberus, passports for the janitor. Immolation of relatives and slave-sacrifice, unknown in the earliest culture, formerly rife in some barbaric societies, and still extant, survives symbolically in the paper effigies of attendants burned at Chinese graves. Many tribes in S.E. Asia offer funeral honours to symbolic images, a practice observed also in Brittany and Italy.

Measures are taken to avoid pollution, as when Yakut inter the mortuary shovels, Warundi the earth baskets. Baganda mourners cleanse their hands with plantain leaves; some Australian aborigines fumigate themselves; Fanti mourners wash in the sea. The Semitic use of burned spices passed into early Christianity. Fear of the ghost's return, which dictates the

Eskimo custom of waving torches behind the corpse, accounts in part for the medieval use of bells and candles. Corpses may be mutilated, or fires maintained on graves. In some instances ghosts are deemed to haunt their former homes until flesh decays. The bones are then disinterred for a final funeral rite, which among the Hurons occurred every twelve years, with solemn tribal feasts.

Funeral feasts are traceable to neolithic Europe. The Gilbert Islands feast during three days preceding the funeral is comparable with the Irish wake. Feasting continues for several months in Madagascar, and for a year in Patagonia. Primitive cannibalism is perpetuated in the Cocoma practice of mixing pulverised bones in ritual cups, and symbolically in corpse-cakes, arval bread, and other special viands provided at ritual meals. These, sometimes indicating communion, are largely displaced by food and money dotes. Dances, designed as magical rites to placate or scare the ghost, or to stamp down the grave, are associated with public spectacles, as in ancient Greece and Rome, or with games, such as the blindman's-buff formerly played in S. Ireland, or the Sioux dicing for the effects of the deceased person. See Burial, Death, and Mourning Customs.

Fünfkirchen (Ger., five churches), PECS, OR PET-KOSTELY. Free town in the county of Baranya, Hungary, 105 m. S.W. of Budapest. It lies in a deep hollow, and is regularly and spaciouly built, the four principal streets being orientated to the four points of the compass, and stretching in each direction to the gates of the town. Its public buildings include a fine Gothic cathedral, a bishop's palace, several churches, and a convent of Ursulines. Its manufactures are woollens, leather goods, and tobacco pipes. Pop. 29,000.

Fung-hwang. Fabled bird of Chinese mythology. Generally described as a kind of phoenix, a fantastic representation of it is frequently found in the decorations of Chinese embroideries and porcelain. Its appearance was supposed to be a good omen. The word is sometimes rendered Fum, and is thus given in Thomas Moore's satiric verses, Fum and Hum.

Fungoid Pests. Parasitic growths that devastate crops. All parts of crops are liable to be attacked by some of the low forms of plant life known collectively as fungi, which include mildews, moulds, rusts, and many others. A notable example was the famine

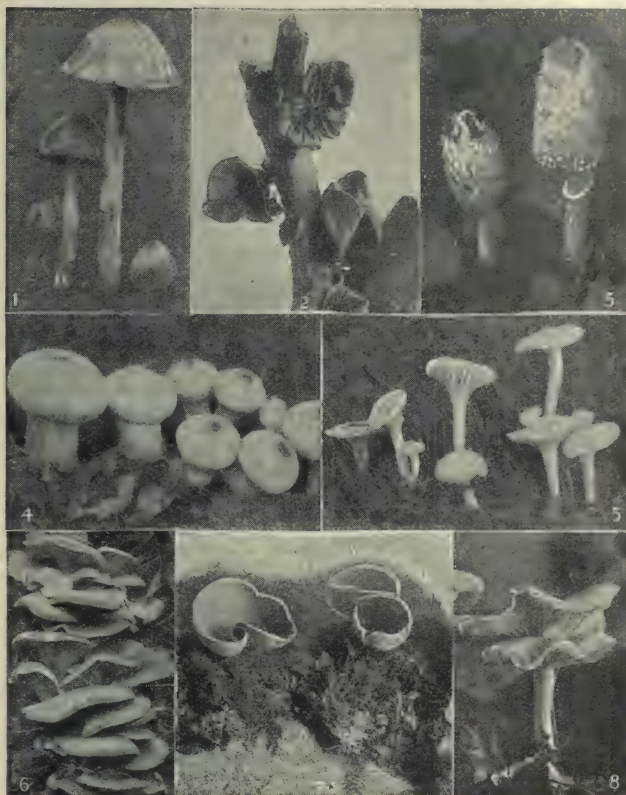
in Ireland in 1845, due to the prevalence of potato disease, which had much to do with the repeal of the Corn Laws in 1846.

In combating fungoid pests, much can be done by sound preventive measures, of which by far the most effective is what may be called good farming, that aims at producing healthy, vigorous crops, since weakly plants are most liable to be attacked. It is particularly desirable, by judicious manuring, to carry a crop as quickly as possible through its critical early stage, since tender seedlings are ill adapted to withstand these pests. Weeds often harbour destructive fungi and insects, and should, therefore, be kept down as far as possible, special attention being devoted to headlands, hedges, and ditches. The danger of infection is much increased by growing a crop continuously on the same piece of land, and this is one reason why proper rotation of crops is a sound policy. The remains of a diseased crop should be burnt, as these harbour spores in the resting stage, and serious losses have often resulted from the presence of infected straw in dung used as a manurial dressing.

If fungoid pests should appear in spite of all precautions, they can be dealt with more or less successfully by the application of fungicides, *i.e.* substances or mixtures that either kill or check the action of fungi. A cereal crop may become diseased by the use of infected seed corn, *e.g.* the spores of barley smut adhere to the husk and attack the seedlings when the grains sprout. In such a case the clinging spores may be destroyed by treatment with hot water (130° to 135° F.) for 5 minutes, the grain having been previously soaked in water for 4 hrs. Pickling in formalin (1 pint to 36 galls. water per 40 to 50 bushels) for 2 hrs., or in a solution of copper sulphate or bluestone (1 lb. to 1 gall. water per 4 bushels) for 8 to 12 hrs., has also been found effective, the pickled grain being dried before sowing.

When the crop itself is diseased it is usual to apply various fungicide solutions in the form of a spray. This method is largely resorted to in fruit culture. One of the most esteemed spray fluids is Bordeaux mixture. Fungicide powders have also found successful employment. See Black Scab; Bunt; Ergot; Mildew; Potato; Rust; Smut; Spraying.

Fungus. Enormous class of cellular cryptogams or flowerless plants. They are characterised by a total absence of chlorophyll and starch. They have no real



Fungus. 1. Inky mushroom, *Coprinus atramentarius*. 2. Jew's ear fungus, *Hirneola auricula-judae*. 3. Lawyer's wig mushroom, *Coprinus comatus*. 4. Puff ball, *Lycoperdon perlatum*. 5. Ivory cap, *Hygrophorus virgineus*. 6. Oyster mushroom, *Pleurotus esomus*. 7. Orange Elf cap, *Olida aurantia*. 8. Amethyst mushroom, *Laccaria laccatus*.

roots, but the creeping threads (*mycel*) which constitute the fungus proper serve the same purpose. For lack of chlorophyll they are unable to decompose the carbonic acid of the atmosphere, and therefore have to obtain organized carbon from decaying or living vegetable or animal matter. Those that attack living matter are known as parasitic fungi; those that are content with decaying material are saprophytes.

The forms of fungi are multitudinous, varying from the hard or corky brackets that advertise their attacks on trees, through the mushrooms, toadstools, and puffballs of the woods and fields, to the minute leaf-moulds, rusts, smuts, and mildews, and to the bacteria. They are all produced by spores, but in some families there is a sexual process before spore production.

POISONING BY FUNGI. The common mushroom, *Agaricus campestris*, sometimes causes symptoms of poisoning if eaten when

not fresh. The tissues contain a certain amount of fat and albumen, decomposition of which probably gives rise to the formation of ptomaines. The more important poisonous toadstools are the following:

Amanita phalloides bears a considerable resemblance to the mushroom, for which it has frequently been mistaken. It may be distinguished by the hollow stem inserted into a bulb at the base, and the white gills or fine laminae on the under surface of the top, those of the mushroom being pink or purplish-black. It contains a poisonous principle termed phallin. *Amanita muscaria*, the fly fungus, has a bright red top studded with white raised spots, and contains a poisonous alkaloid, muscarine. *Russula integra* has a smooth red top and thick fragile gills, and contains muscarine. The suspected *Boletus luridus* has a thick fleshy cap on whose lower surface a series of tubes with red openings are exposed. The

broken fleshy tissue quickly turns blue when exposed to air.

The symptoms of poisoning appear six or eight hours after the fungus has been eaten. They are not uniform in character. In some cases there is marked gastrointestinal irritation with vomiting, colicky pain in the abdomen, and diarrhoea. In others, nervous symptoms are more prominent, such as headache, giddiness, delirium, muscular twitchings or convulsions, and coma. These may be followed by signs of gastrointestinal irritation. Death may occur in a few hours, or may be delayed for two or three days. Treatment consists in giving an emetic, though, as much of the fungus may have passed into the bowel before the symptoms appear, this may not be of much avail. A dose of castor oil should be given to clear the bowels. Atropine is recommended as an antidote to muscarine, and digitalis may be useful. Persistent diarrhoea may be checked by the administration of opium. *See Mycology.*

Funis (Lat.). Cord consisting of blood-vessels which unites the infant in the womb with the placenta. *See Umbilical Cord.*

Funny Bone. Popular term for the groove between the olecranon process of the ulna and the internal condyle of the humerus on the inner side of the elbow. The ulnar nerve passes along this groove, and a blow on the nerve at this point produces the familiar sensation of "pins and needles." *See Elbow.*

Funston, FREDERICK (1865-1917). American soldier. He was born at New Carlisle, Ohio. After working as a rly. employee, reporter, etc., in 1896 he joined the insurgents in Cuba under Garcia. In the Spanish War he served as colonel of volunteers in the Philippines, where in 1901 he captured the insurgent leader Aguinaldo. He became regular brigadier-general, 1901, and major-general, 1915. He led the expedition to Vera Cruz in 1914, and was military governor of that city during the American occupation. In March, 1916, he was in general command of the U.S. forces on the Mexican border, and had charge of the operations against Gen. Villa. After the earthquake at San Francisco in 1906, Funston was conspicuous in the organization and rehabilitation of the city. He died at San Antonio, Texas, Feb. 19, 1917.

FUR: ITS SOURCES AND TREATMENT

John C. Sachs, Fur Trade Expert

This is a sketch of the history of the wearing of furs, and the way they are prepared for the market. See the articles on the various fur-bearing animals: Fox; Marten, etc.; also Costume

Fur (old Fr. *forre*, sheath) may be defined as the skin of certain mammals which, after preparation, is worn by men and women for warmth. The Tabernacle of the Israelites had an outer covering of badgers' skins (Exod. xxvi, 14) and an inner one of rams' skins dyed red (Exod. xxxv, 7). The Chinese claim to have employed furs for some 3,000 years, but their methods of preparing the skins have stood still for centuries, and the same remark applies to other Asiatic countries. The Assyrians, Greeks, and Romans all made lavish use of furs. The practice is mentioned by Herodotus, and Hercules, we are told, used the skin of the Nemean lion as a garment.

The Romans learnt the ornamental use of furs from the Greeks, who owed their knowledge of them to their campaigns in Asia Minor and elsewhere against the Medes and Persians. The legend of Jason and the Golden Fleece was probably the allegorical description of the voyage of a Greek fur trader who sailed into the Black Sea and collected large stocks of valuable furs from what are now southern Russia and Armenia. Skins were

worn by the ancient Britons, Saxons, Danes, and Norsemen, but women made comparatively little use of furs until the Middle Ages.

Ceremonial Fur Wearing

With the march of civilization, the number and variety of fur-bearing animals slaughtered for their skins greatly increased, and many edicts were promulgated forbidding the use of various fine furs by the commoners. Thus the wearing of ermine early became a badge of nobility, and miniver, or ermine powdered with black spots, was regal wear, and to this day figures in the coronation robes of kings. Men wore heavily furred garments during the York and Lancaster period, and both sexes displayed furs freely in the time of the Tudor sovereigns. Henry VIII is portrayed almost swathed in furs.

Furs fell into disuse in Britain during the Stuart period, but a most important event with regard to the trade happened after the Restoration, when Prince Rupert founded a company to trade for furs in Hudson Bay, 1670. From this really dates the commencement of the British fur trade. It did not start under the happiest auspices;

the first company was a failure; the wearing of furs was objected to by the Puritans as savouring of vanity, and the elegant dress of the cavalier, although eminently suitable for the display of ribbon, velvet, and lace, was not adaptable to the employment of the furriers' art. Up to this period, and indeed long afterwards, the chief fur markets of the world were on the European continent. Constantinople—for over 1,000 years—Nijni Novgorod, Venice, and Genoa may be mentioned, and smaller markets were held at Nuremberg and Leipzig.

Furs were but little worn in England or France during the greater part of the 18th century, but there was a gorgeous display of them at the coronation of Napoleon, and in the old caricatures of Rowlandson may be seen those enormous muffs that, in the ever-revolving wheel of fashion, were reproduced in the 20th century. Queen Victoria's coronation robes were trimmed with ermine, and Dickens's Arabella Allen wore boots with "fur round the tops."

Canadian and Siberian Furs

The two great fur-producing countries of the world are Canada and Siberia. The colder the country the better the fur, hence the covering of the animals produced in the high latitudes of Canada and Russia is particularly thick and warm. From Canada and Siberia come, among others, the sable and American marten, mink, ermine, fisher, red and silver fox, lynx, wolf, beaver, musquash, otter, bear, squirrel, wolverine, elk, and musk ox; while within the Arctic circle are found the polar bear, white fox, seal, and hair seal. Skunk, raccoon, and opossum come largely from the U.S.A. Australia produces opossum, wallaby, and vast quantities of rabbit; the beautiful chinchilla comes from Peru and Argentina; and Armenia gives its name to the ermine, though its habitat is farther north. Astrakans, slinks, caracul, tigers, sheep, goats, and bears are natives of Central Asia.

The transfer of these skins from the wilds to the ultimate wearers necessitates an immense organization. The great fur companies have their main depots around Hudson Bay, which is closed to navigation by ice for over nine months every year; hence a vast amount of work has to be done during the short time that the bay is open. The *modus operandi* is briefly as follows. As soon as the ice breaks up the steamers make for the depots, and on arrival discharge their cargoes, consisting of food, clothing, rifles, ammunition, axes, etc. The empty holds are at once refilled with furs

which have been brought from the base posts to the depots to await the arrival of the ships.

Smaller steamers convey the stores to the base posts, which in their turn make use of sailing barges or scows as a means of communication with the ordinary posts. These get in touch with the outposts or flying posts by canoe or sledge, and the flying posts are open at agreed times during the year, to receive visits from the hunters and trappers, obtain their catches, and furnish them with necessities.

European agents are located at base posts—where are collected provisions for the ordinary posts, as well as their accounts and their collections of skins—and these officials have under their orders rangers, who are fast dying out, half-breeds, Indians, and Eskimos. Indians obtain skins up to about 55° N. latitude—the far northern regions are worked by Eskimos. As the skins of the fur-bearing animals are at their best in winter, it is then that the trapper sets out on his journey, running into hundreds of miles. Equipped with a sled, sleeping-bag, flour, bacon, pemmican, matches, rifle and ammunition, knife and traps, he leaves the frontiers of civilization, and may not see another human being for months. At each halt he lays his traps—a process which may take him days—visits and takes them up after a suitable interval, skins the animals, packs the skins on his sled and moves on. He plans his journey so that he may arrive at an outpost when his food supply is getting low. The cold in these regions is intense—100° of frost being often registered.

The London Market

London, although its supremacy has been recently challenged by St. Louis, U.S.A., is still the premier fur market of the world, and to London the bulk of the raw skins is consigned. They are lotted and sold at College Hill sale rooms to buyers from all over the world, in Jan., March, and Oct.

Experts sort and value the skins, which are then fleshed, i.e. cleaned of fat, etc., by round revolving knives. Next they are placed in a bed of grease, oil, yolk of egg, butter or some greasy substance, and subsequently pounded in a treading vat, which causes the grease to enter the pores of the leather. After this, hot sawdust of beech or mahogany is rubbed in, with the resultant effect of drying the grease. Machines are then utilised to unhair certain skins, i.e. take away the long coarse hairs, leaving only the soft and silky down. Thereafter such as are

intended for dyeing are immersed in dyeing vats. Finally skilled craftsmen deal with the skins, which, when manufactured into garments, become furs.

Of these craftsmen, the first and most important is the assorter, a highly trained specialist. His task is to select such skins as will work up together. Colour, length of hair, quality, texture, grounding, leather, and cost—all must be considered, and to get a perfect match he frequently rejects hundreds of skins. The selected skins are sent to the cutter, with whom work one or more nailers, men who with knives and nails skilfully work the skins to the pattern accompanying the order. Sewers, using a variety of machines, and subsequently liners and finishers are employed, and designing goes on incessantly. Moth, the great enemy, is kept under by beating the furs with a light cane, or by cold storage, which is the more effectual.

London Fur Sales

To combat the gradual disappearance of many fur-bearing animals, amongst which may be mentioned the sable, seal, chinchilla, beaver, and silver fox, numerous animal farms have been established with a very fair amount of success. The following quantities of skins were offered at the London fur sales held Oct., 1920.

	Skins
Mole	1,247,393
American Opossum	864,429
Musquash	800,841
Skunk	627,824
White Hare	433,676
White Rabbit	302,171
Wallaby	263,356
Squirrel	229,972
Grey Goat	168,251
Red Fox	144,050
Australian Opossum	129,177
Ermine	126,811
Tibet	91,632
Mink	23,644
Beaver	22,158
American Marten	13,983
Seal	3,241
Silver Sable	1,625
Russian Fox	943

Furetière, ANTOINE (1619-88).

French writer and satirist. Born at Paris, Dec. 28, 1619, he entered the Church, becoming abbé of Chailvoy and prior of Chuignes. He wrote a number of satirical poems, a versified set of Gospel parables, a book of fables, 1673, and is chiefly remembered for his humorous story, *Le Roman Bourgeois*, 1666, written to cast ridicule on the romances of aristocratic gallantry then in vogue. He was elected a member of the French Academy in 1662, but was expelled in 1685 for preparing a dictionary, a work which the academy regarded as its exclusive privilege. He died May 14, 1688, his dictionary being published in 1690.

Furfurane or **FURANE**. Compound produced by distilling barium pyromucate with soda-lime. It is also known as tetrol, tetraphenol, and tetrane. It is contained among the distillation products of pinewood tar. By the action of acids furfuran is converted into pyrrol-red.

Furies (Lat. *Furiæ*). In classical mythology, the name under which the Romans knew the Eumenides (*q.v.*).

Furka. Mt. road of Switzerland, in the Valaisian Alps. It runs between the upper Rhône valley and that of the Reussau, leading past the Rhône glacier to Andermatt, in canton Uri. Its maximum height is 7,991 ft.

Furlong (O.E. *furlang*, furrow-long). British measure of length, one-eighth of a mile, or 220 yds. The name is derived from the old English furrow length. A square, each side of which was a furrow 220 yds. long, contained 10 acres. See *Acres*.

Furlo Pass (anc. *Intercisa* or *Petra Pertusa*). Tunnel through the Apennines in Perugia. It is on the road from Rome to Ariminum, the ancient Via Flaminia. It is about 40 yds. long, 14 ft. high, and 17 ft. wide, and, according to an inscription cut in the rock, was made by the orders of the emperor Vespasian in A.D. 77.

Furlough (Dutch *ver lof*, for leave, or *oorlof*, permission, sanction). Army term designating the absence from duty of N.C.O.'s and men, for periods in excess of six days, with the permission of the commanding officer. The term was also formerly applied to officers' leave, but now only in the Indian army, and it is occasionally employed in the same sense in civilian and official life.

Furlough is granted at the discretion of the commanding officer, and in normal times it is usual for approximately a quarter of the strength of regiments to be on furlough on full pay from Oct. 1 to Feb. 1, each man usually being granted a month at a time, but possibly longer if he resides a long distance from the station. A soldier is usually granted two months' furlough prior to discharge, so that he may secure employment while still in receipt of army pay. A soldier on furlough is not permitted to leave the United Kingdom, and his pass may be endorsed with the permission to wear civilian clothes. During the Great War an innovation was made in active service conditions by granting furlough to men in the line, as regularly as the exigencies of the campaign permitted.

Furnace (Lat. *fornax*, a furnace). Term applied to structures in which heat is developed or utilised, including those used for steam raising and certain chemical operations. Its most general and important application, however, is to the structures used for the extraction of metals from their ores, or for the refining or working of metals. Some reference to the earliest forms of furnaces will be found under the heading Metallurgy. Modern furnaces may conveniently be divided into five types, each of which again may be sub-divided into classes; while one type will here and there shade off into another.

Hearths, the first type, are very largely used for the preliminary metallurgical operation of roasting ores to drive off sulphur, arsenic, or other volatile elements. Such roasting hearths are the simplest forms of furnace, consisting, in some cases, of nothing more than a prepared piece of ground on which the ore is stacked in a pile or heap; more advanced forms are seen in the stall, pit, and kiln, and in the hearth used for the liquation of argentiferous copper. All these are worked by natural draught. In the common blacksmith's hearth and the iron refinery, we have a type of hearth worked by forced draught.

The second type of furnace is the shaft, worked by natural or forced draught. Some are in height less, or little more, than in breadth, and in others the height considerably exceeds the breadth or diameter. In the former case we have the iron ore calciner, and various kilns, and in the latter the blast furnace, the cupola and special modifications of the blast furnace, such as the Pilz and the Raschette.

The Reverberatory Furnace

The third type is the reverberatory, which, while it may be worked either by natural or forced draught, is always distinguished by a particular principle indicated by its title. Whatever metal is being treated in this furnace, it is not normally in contact with solid fuel, but is smelted or treated by causing the heat to reverberate, or to be thrown from the crown or sides of the furnace on to the metal below. There are many forms of this type of furnace, including the puddling and tube furnace, and forms associated with the names of Siemens, Hasenclever, Brückner, Pearce, Brown, and Stetefeldt.

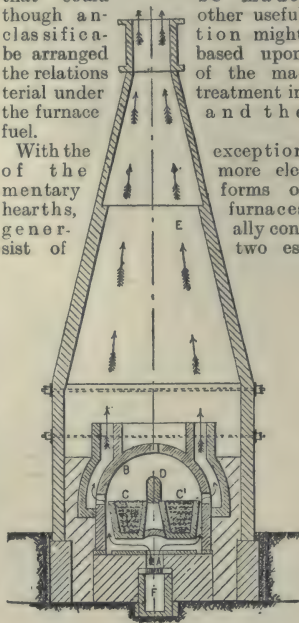
The fourth type may be called the close chamber type, and may be divided into two classes, those in which the material under treatment is merely melted more or less, and those in which the substance is volatilised. To the former belong

the ordinary crucible and muffle furnaces, and to the latter the retort furnaces as used for the production of zinc. The fifth type is represented by the electrical furnace, which like other types assumes various forms, and may have features either of the shaft or reverberatory classes.

The classification of furnaces which has just been sketched, while not perfect, is perhaps the simplest that could be made, though an classification arranged in the relations of the material under the furnace fuel.

With the of the mentary hearths, gener- consist of

exception more ele- forms of furnaces ally con- two es-



Furnace. Furnace of closed vessel type, as used for production of steel for cutlery, etc., by cementation process. A, firebricks; B, furnace; C, C', pots or boxes containing bars of iron in carbonaceous matter; D, manhole; E, shaft; F, ash-pit

essential portions, an inner one, which contains the metal, and in some forms the fuel also, and an outer portion, the purpose of which is to give structural stability to the whole. The inner portion may be detached as in the crucible furnace; but in any case, as it must withstand very high temperatures and also it may be the combined mechanical and scouring action of the molten contents, it is necessary to construct it of refractory materials. Again, where it is part of the fixed structure, as it must in course of time wear away, it is desirable to build it so that it may be renewed without serious disturbance to the outer structure. It is, therefore, usually made in the form of a removable liner. The materials used in the construction of this important inner section

comprise alumina, silica, lime, magnesia, graphite, in the form of firebricks of clay, bauxite, or magnesia or lime, Ganister and Dinas rock, and various special preparations.

As in most modern furnaces large quantities of materials, ore, fuel, and fluxes require to be handled, much ingenuity has been expended in devising mechanical appliances for this purpose in order to save labour; while gaseous fuel in the forms of producer and water gas has been largely substituted for solid fuels. See Blast Furnace; Coke; Metallurgy; Smelting; also Boiler, *illus.*

ELECTRIC FURNACE. The temperatures attainable by gases, liquids, and solids when resisting the passage of an electric current far exceed those of the fuel-fired furnace, and even of the oxy-hydrogen flame, and are approached only by those given by the oxy-acetylene jet and the combustion of powdered aluminium. The application of electric heating to metallurgical and chemical processes on a commercial scale began as recently as the year 1890, but has already yielded most important results. We owe it the possibility of manufacturing in large quantities, at a corresponding low cost, aluminium, carbide of calcium, pure calcium, carborundum, caustic soda, phosphorus, sodium, strontium, and other chemicals. In the old-established iron and steel industries the electric furnace is rapidly becoming a dangerous rival to the coal or gas-fired furnace, especially for the production of high-grade and alloy steels.

Moissan's Electric Furnace

Moissan, an eminent Frenchman, first embodied the idea of the electric furnace in a practical form. His furnace was made from massive blocks of limestone hollowed out into the form of a crucible, the hollowed parts being lined with magnesia. Two carbon poles were introduced from opposite sides just above the hemispherical bottom where the material to be fused would lie. A powerful electromagnet was fixed on the outside of the furnace in such a manner that as an arc was established between the two carbon poles it could be deflected down on to the material in the crucible.

In this furnace a temperature of 3,500° C. (6,332° Fah.) could readily be attained, and many substances which had been supposed to be irreducible could be melted. Moissan succeeded in isolating chromium, manganese, molybdenum, titanium, tungsten, uranium, vanadium, and zirconium. Sir William Siemens made further

improvements, and in 1882 was able to melt 10 lb. of platinum in a furnace which consisted of a carbon crucible constituting one pole of the system, and a vertical carbon rod suspended in it forming the other.

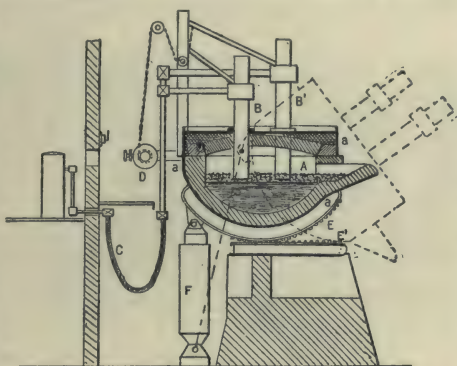
Electric furnaces may be grouped roughly under three main heads: (1) those in which the heat is derived from an electric arc; (2) those in which the substance to be heated acts as a resistance or is in contact with a resisting substance; (3) those which use arc and resistance heat in combination.

The first class is exemplified by the Moissan furnace and the Stasano iron-smelting furnace, with an arc formed inside a covered chamber of refractory material above the substance treated, which receives the heat directly by radiation and by conduction from the walls of the chamber.

The Héroult Furnace

The second or resistance furnace is exemplified by the Héroult type of steel furnace, which consists essentially of a hollow bed of refractory material on which the charge to be melted is placed and one or more carbon poles placed vertically above it and provided with means by which they may be lowered down to the material on the hearth. The heating is developed by numerous small arcs formed between the poles and the charge, which may be steel scrap or pig iron. As these arcs flash about from point to point of the charge the melting gradually proceeds until the charge is entirely molten. In this type of furnace the anode is formed by adjustable carbon rods, and the cathode is the hearth itself and its containing casing. (See Aluminium, illus.)

The resistance offered to the passage of the current through the mass of material on the bed of the furnace suffices to melt the charge, but does not decompose it. The decomposition is accomplished by the electrolytic action of the current, which breaks up the ore, setting free oxygen which combines with the carbon of the anode and escapes as carbonic oxide, which burns as it issues from the furnace.



Furnace. Sectional elevation of Héroult Arc furnace. A, furnace; a, steel plate casing, B, B', electrodes; C, flexible cable connexion between electrodes and current transformer; D, electric motor and supplementary hand gear for adjusting positions of electrodes in the furnace; E, E', racks for tilting furnace; F, hydraulic pusher for tilting furnace to discharge molten contents. Position when pouring molten metal is indicated by the broken lines

The induction furnace is based upon a different principle. In the Kjellin iron-smelting furnace alternating high-tension current, passed through a vertical coil with heavy iron core, induces a low-tension current in a charge of ore or metal which occupies an annular trough concentric with the coil and acts as the secondary circuit.

Indirect resistance heating is used in the manufacture of carborundum (carbide of silicon). A core of small lump coke is the resistance. Round it is packed a charge of mixed carbon powder, sand, sawdust, and salt, covered with a coating of loosely piled bricks. The intense heat of the core, which is converted into pure graphite, causes the carbon surrounding it to combine with the silicon of the sand as carborundum to a depth of a foot or more. The body of the kiln is broken up, and the partly combined material used for the next charge.

At the end of 1918 there were in Great Britain about 140 electric furnaces in operation or under erection, much the greater number being of iron or steel. In the U.S.A. there were about 287, and in Canada 43. The great advantage of the furnace, apart from the facility with which very high temperatures may be reached, lies in the greater purity of the products turned out, due partly to the absence of contact between the metal and deleterious elements

in ordinary solid or gaseous fuel, and partly to the more regular and higher temperatures which may be employed. Whether the use of the electric furnace for the direct production of pig iron will much extend and the blast furnace be ultimately superseded, it is too early to predict. Progress in this direction will be determined by the relative costs of coke and the equivalent in electrical energy. Where water-power is abundant and cheap, and other conditions are favourable, there is no doubt that the electrical system will be favoured. See Aluminium; Copper; Iron; Steel; Welding, Electric.

Furneaux. Group of islands between Tasmania and Australia in Bass Strait. They were discovered in 1773 by the English navigator Tobias Furneaux. Flinders Island, the largest, is 35 m. long and 10 m. broad. Pop. 170.

Furnes. Town of Belgium, in the prov. of W. Flanders. It is 16 m. E. of Dunkirk, on the rly. from Dunkirk to Dixmude. In the Great War it was first bombarded by the Germans, Oct. 24—



Furnes. The Grand' Place, with the Hôtel de Ville, Palais de Justice, and Church of S. Walburge

27, 1914, in which month the Allies evacuated it. The French conferred the *croix de guerre* on it in 1920. Pop. about 6,000.

Furness. District in the N.W. of Lancashire, England. It is detached from the main portion of the county by Morecambe Bay. Its area is 250 sq. m. The hematite iron ore in the S. of the district was worked by the Romans.

Furness, CHRISTOPHER FURNES, 1st BARON (1852-1912). British shipowner. Born April 23, 1852,



1st Baron Furness, British shipowner

Russell

at West Hartlepool, he was educated privately, and in 1876 became a shipbroker, establishing soon afterwards the Furness line of steamers. In 1885 he went into partnership with



Furness Abbey. Ruins of the 12th century monastic buildings of one of the wealthiest and most powerful abbeys in pre-Reformation England, since 1920 the property of the nation

Photochrom

Edward Withy, of Hartlepool, the firm being known as Furness, Withy & Co., and soon established a huge business as ship-builders and engineers. He was Liberal M.P. for Hartlepool, 1891-95, contested York City in 1898, and represented Hartlepool in 1900-10. Knighted in 1895, he was raised to the peerage in 1910 as Baron Furness of Grantley. In religion a Methodist, Furness was responsible for several philanthropic schemes and started a co-partnership scheme among his employees. He owned over 30,000 acres in Yorkshire. He died Nov. 10, 1912, and was succeeded by his son Marmaduke (b. 1883), who was created a viscount in 1918.

Furness Abbey. Picturesque ruins, 1 m. S. of Dalton, Lancashire, England. Situated on the banks of a small stream, in a wooded valley, close to a station on the Furness Rly., they include part of the Transitional Norman nave, Early English chapter house. Decorated transepts, and Perpendicular belfry and presbytery. In the abbot's chapel are two 12th century effigies of knights in armour. The abbey, dedicated to S. Mary, was founded in 1127 by Benedictines from Normandy, under the patronage of the earl of Morton, afterwards King Stephen, and became Cistercian in 1148. The abbot had feudal powers over the whole surrounding district, and the foundation was richly endowed. In 1920 Furness Abbey was presented to the nation by Lord R. Cavendish. See Furness Past and Present, S. Richardson, 1880.

Furness Line. British steamship company. It was founded by Sir C. Furness, afterwards Lord Furness, in 1877, and is the name by which the various steamers of Furness, Withy & Co.; the Furness-Houlder Argentine Lines; Warren, Johnston, etc., are popularly known. In Sept., 1917, Furness, Withy bought the fleet of 14

Glen steamers, representing 70,000 tons gross. In 1917 the firm purchased the Rushbrooke dock premises at Queenstown, and in 1920 Bellamy's Wharf and Dock, Rotherhithe. The Compagnie Furness (France) is a subsidiary concern.

The Furness line has regular sailings from Liverpool to Newport News and Baltimore; from London to Philadelphia, Montreal, and Halifax; Glasgow to Philadelphia and Boston; Leith and Dundee to New York and Philadelphia; Leith and Middlesbrough to Baltimore; Bombay to Antwerp; Montreal to Antwerp; Newport News to Antwerp; New York to Havre, etc. Its head office is Furness House, Billiter Street, London, E.C.

Furness Railway. English rly. line. Its total mileage is 428 m., and it serves the rich mineral district round Barrow-in-Furness. First opened in 1846, it has been considerably extended; its working connexion with the Midland and L. & N.W. lines makes it a link in the route to the Isle of Man and Ireland. It owns docks, wharves, etc., at Barrow, where are its headquarters and works steamers; the Ulverston canal. It is now part of the London, Midland and Scottish Rly.

Furniss, HARRY (1854-1925). British caricaturist. Born at Wexford, of Anglo-Scottish parents, he came to London in 1878. He contributed sketches to The Illustrated London News and other journals. He joined the staff of Punch in 1880, at Burnand's invitation, as illustrator of the Essence of Parliament. In this capacity he created the legendary Gladstone collar, the traditional portraits of

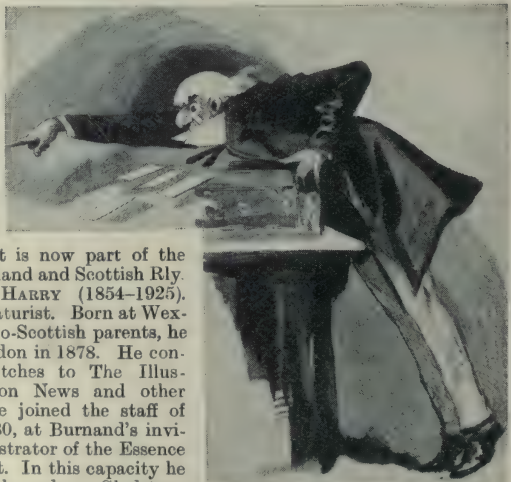
Sir W. Harcourt, Sir Richard Temple, J. G. Swift McNeill, and other mirth-provoking caricatures. His connexion with Punch lasted till 1894, when he started his own weekly, Lika Joko. He illustrated

the works of Dickens, 1910, and Thackeray, 1911, and also wrote many books, including Confessions of a Caricaturist, 1901; Harry Furniss at Home, 1903; Poverty Bay, a novel, 1905; How to Draw in Pen and Ink, 1905. For some years he lectured with great success on The Humours of Parliament throughout the British Isles, Australia, Canada, and the U.S.A., and later wrote several plays for the cinematograph. He died Jan. 14, 1925. See Bardell, Mrs.; Caricature.



Harry Furniss

Russell



Furniss. One of his famous caricatures of Gladstone

FURNITURE: DEVELOPMENT & STYLES

Percy Macquoid, Author of *A History of English Furniture*

In addition to this sketch of the development of furniture, there are articles on all the forms of furniture, e.g. Chair; Chest; Table, etc. See also Cabinet-making: Adam style; Chippendale; Hepplewhite; Sheraton; etc.

We must turn to Egypt for the earliest known records of domestic furniture. In bas-reliefs, dating from 4000 B.C., beds, tables, chairs and stools are all found represented. The bed of the wealthy classes was a horizontal frame of wood or bronze, terminating with heads such as a lion or hawk, and standing on four legs in representation of the animal. The mattress was supported by an interlacement of leather thongs, those of the middle and poorer classes being a wicker framework of palm sticks with a straw pallet. The pillows were of crescent form calculated to rest the neck, and made of Oriental alabaster on a grooved or fluted shaft, or rare polished woods painted; the poor being content with those of pottery and stone. The couches were similar to the beds, but with one end raised and scrolling over in a graceful curve, and probably were transformed from one use to the other by different coverings, being chiefly used in the day for sitting, as Egyptians, like early Greeks and Romans, are always portrayed sitting at their meals, never reclining.

Ancient Furniture

The chairs and thrones appear to have been fabricated of metal, ebony, and other rare woods inlaid with ivory, the state chairs represented on the tombs of the kings at Thebes (c. 1800 B.C.) being most graceful and elaborate. The legs were invariably those of some animal, the difference between the fore and hind leg being carefully observed; the arms were frequently in the form of lions passant or couchant, carved and painted or plated with gold, the backs receded gradually and scrolled over like the couches, with a pillow of gold and silver tissue, painted leather or coloured cotton. Smaller chairs were also of most interesting form, some with the backs hollowed, panelled and inlaid; others with splatted backs, the seats being of wood, interlaced string or leather thongs, and these chairs have served as models throughout the world even to the present day. Examples can be seen in the Cairo, British, and Leiden Museums. At Leiden the back of the chair is 17 ins. and the seat 13 ins. Stools are far more frequently represented in Egyptian sculptures than chairs; some were of folding form, with leather seats, some inlaid and like the chairs, only without backs.

Many had solid sides, and others three legs, but nearly all appear to have had stretchers.

Small tables were round, on a single, central support, which was often in the form of a captive, a motive also much introduced under chairs. Larger tables were four sided, with three or four legs; some had solid sides, all varieties being made in wood, stone, or metal. The fragments of this furniture, as well as the remnants of stands for holding wine-jars, footstools, chests, boxes, etc., that have been discovered, prove the wonderful degree of luxury these people had attained. Although the civilization of Chaldaea and Assyria was later than that of Egypt, the furniture of those countries appears to have been far more crude; there were no comfortable curved backs to the couches, chairs, and beds, and on the bas-reliefs the furniture portrayed is always rectangular, with metal bosses at the corners, and with heavy fringes.

No record remains of Hebrew furniture beyond the Biblical descriptions, which are very limited, for, as a nation, they were forbidden any representation of social life by sculpture; but we may assume their taste was based upon that of Phoenicia, Assyria, and Egypt. Persia, a still later civilization, was more Oriental than any of these nations, and its furniture consisted of low divans, cushions on the ground, stools, thrones, and tables of Syrian designs. No specimens of Greek wooden furniture are in existence, only fragments of those in marble or metal have survived, but their vases show that very elegant forms existed and on a par with their sculpture of 500 B.C. Their chairs were strong-looking and graceful, with backs rounded to accommodate the body, the legs sweeping outwards in fine curves, and constructed of wood inlaid with ivory and coloured woods, or studded with paterae in the precious metals.

Greek and Roman Couches

The couches and beds were generally rectangular, standing on stout balustered legs, often overlaid with plates of gold or silver, but the head-rest of the Egyptians was soon discarded and replaced by cushions, the introduction of the bedhead as part of the structure being distinctly noticeable. These couches were used by the Greeks and Carthaginians for reclining

during meals, a fashion adopted by the Romans towards the close of the Punic wars.

The Romans quickly surpassed the Greeks in domestic luxury, and after the sack of Corinth by Mummius, 146 B.C., when paintings, sculptures, and works of art arrived for the first time in Rome as part of the spoils, these objects of art were at once reproduced by the Greek craftsmen who flocked to Rome for employment. The furniture must have remained in fashion over 200 years, as the ringed bronze balustered chairs, stools, and couches discovered at Pompeii are clearly all evolutions from Greek designs. Among the fragments of Roman furniture preserved in museums are portions covered with tortoiseshell, silver, and mother-of-pearl; and Commodus, A.D. 180, is known to have possessed a couch of ivory studded with large opals. Both Greeks and Romans had chests made of precious woods, ornamented with nails, masks, and heavy handles, the fronts being often painted with subjects.

Saxon and Norman Styles

Wherever the Romans colonised, they introduced a certain amount of furniture, and it is easy to trace its influence on both Saxon and Norman motives. Beds in the time of Alfred the Great, except for the very wealthy, consisted of a sack filled with straw, laid on the chest in which it was kept during the day or on boards placed in cutained-off recesses in the living-rooms. The term bedstead then meant only the locality; the words "bolster" and "pyle" (pillow) were also Anglo-Saxon. The sleepers probably wrapped their naked bodies in sheets and drew coverlets of bear and other skins over them.

About 1200 beds began to assume a definite balustered form, with tester and hangings from the ceiling beams. Neckam, writing a little later, in his description of a bedroom, says that beside the bed should be a chair, and at the foot of the bed a bench for conversation, on which a child or servant could sleep at night; there should be also a pole or perch for the falcons and another to hang clothes on. The sheets were of linen or silk, supplemented with a cloth coverlid and heavy furs in winter. Posts to beds were not invented till the 16th century. These were elaborately carved, supporting an oak-panelled tester, the backs to the beds being solid and often arcaded and inlaid.

The earliest form of English chair was of turned oak, then roughly carved, but every variety was exceedingly scarce until the 17th century, being only used by

the master and mistress of the house or by important guests, ordinary people being seated on chests, stools, benches, and settles, or on the floor, as cushions were scattered about everywhere. Many of the settles had a long chest for storage beneath the seat, and high backs as a protection against draughts; they were of carved oak and often inlaid.

Chairs of X form were introduced soon after 1500, covered in leather, cloth, or velvet, and much befringed, late English examples of which are preserved at Knole Park. Fixed upholstery did not exist in Great Britain until 1600, and oak carved panel-back chairs were the usual form of chair from 1430 to 1650, their use being continued longer in England than in France. Almost all chairs were made with arms until about 1600, when fardingale chairs appeared, as arms interfered with these huge skirts, and at this same time the settee and couch began to replace the oak settle of Gothic times. The legs to all these chairs and stools were of straight, simple baluster shape.

English Tables

Round and trestle tables were in use from Saxon times until the 16th century, the former supported on one or more legs, the latter with solid, flat carved ends connected by a long central stretcher; about 1540, the oak "joyned" table made its appearance, composed of a long top resting on a frame, with legs and stretchers morticed at the corners; the legs soon assumed a bulbous shape headed by capitals, the sides of the frame being carved and often dated. These, used in the great halls all through the 16th and 17th centuries, were also made with extension draw-tops, and better and smaller specimens were sometimes inlaid. Fine examples of these are preserved at Hardwick. Other important pieces of furniture in oak were court cupboards, buffets, and chests, the first being an evolution from the double hutch of Gothic times; early specimens were elaborately carved, becoming plainer as the 17th century proceeded, and examples are found dated as late as 1720.

About 1655 a great change took place in all furniture; France and Holland introduced a twist into the uprights on tables and chairs which was soon copied in England, being very suitable for the walnut wood that had lately come into fashion; tall backed chairs became popular, with caned backs and seats and carved uprights, crestings, legs, and stretchers; these were often made in sets, with a day-bed to match, the style lasting till about

1700. Contemporaneously with these, soft wood furniture, elaborately carved and gilt, first made its appearance in England, emanating from Italy and France, which eventually, under the direct influence of Daniel Marot, who was attached to the court of William III, led to the introduction and development of the cabriole leg.

Upholstered Beds

By 1660 the beds of the wealthy were most elaborately and extravagantly draped with embroidered curtains and valances, and crested with plumes; in the next century they sometimes attained a height of 17 ft., and the fine carved oak posts were discontinued, though small plain oak beds still found favour with the middle classes. The English lacquer that accompanied these upholstered beds was copied from the Chinese and first introduced here from Holland, the fashion lasting for nearly 100 years. By 1720, the cabriole leg was firmly established, lending itself well to the new hard wood, mahogany, and was introduced whenever possible on all furniture, particularly chairs, the backs of which had become low with hooped backs and with the flat splats, which first brought celebrity to Thomas Chippendale, the inventor of their varied subdivisions.

This master and his school produced every possible form of mahogany furniture, always preserving his own individuality, even when deliberately adopting French models; having exhausted all known motives, he finally allied himself with Robert Adam, and further influenced by Riesener and Piranesi, he executed numberless pieces of inlaid satin wood and mahogany furniture most light and elegant in treatment. Hepplewhite and Sheraton continued on these delicate lines, adding the additional charm of painting to their decorations.

Towards the end of the 18th century, a style known as "Empire" in France, arose, founded on strictly classical lines, but it was represented in England without any of its original charm, and with coarse brassembossments and brass inlay on clumsy structures of mahogany and rosewood; this, drifting into the heavy mahogany and gilt eccentricities of George IV culminated in the pur-

poseless furniture of 1840, when clumsy copies of previous styles were fabricated and all originality of design on furniture gradually ceased. See Geffrye Museum; also Bureau, Dresser, etc., illus.

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Furniture Polish. Liquid for polishing furniture. It may be composed of 1 oz. of beeswax, $\frac{1}{2}$ oz. white wax, $\frac{1}{2}$ oz. finely shredded Castile soap, heated in a pint of boiling water. When cold, $\frac{1}{2}$ pint of turpentine and $\frac{1}{2}$ pint of spirits are mixed with the other ingredients.

Furnival, BARON. English title borne by several families since 1295. It was created when Thomas de Furnival was summoned to Parliament in 1295, and was held by his male descendants until the 4th baron died in 1383. Thomas Neville and John Talbot in turn sat in Parliament under this title, each having married an heiress of the barony. Talbot was made earl of Shrewsbury, and until 1616 the barony was held by the earls. In 1651, after a period of abeyance, it came to a daughter of the 7th earl of Shrewsbury, through her marriage with Thomas, earl of Arundel, and was linked for a time with the dukedom of Norfolk. This union lasted until 1777, when it again fell into abeyance, to be revived for Mary Frances Catherine Petre, a daughter of the 14th baron Petre. She was a descendant of the 9th baron Petre and his wife, who belonged to the duke of Norfolk's family.

Furnivall, FREDERICK JAMES (1825-1910). British philologist and editor. Born at Egham, Feb.



Furnival's Inn, London. View of the interior of the inn before its demolition

From Wilkinson's *Londona Illustrata*, 1819

4, 1825, he was educated at University College, London, and Trinity Hall, Cambridge, and was called



F. J. Furnivall,
British philologist
Elliott & Fry

to the bar in 1849. He was chiefly known for his services to English literature. The publications of the Early English Text Society, founded by himself, like the *New Shakspere*, Chaucer, Wyclif, Browning, and Shelley societies, have been of great service to students of English. His own most important work was an edition of Chaucer. He took much interest in the welfare of the working classes and in the Working Men's College. He was a keen oarsman, and started a rowing club for working girls. He died July 2, 1910.

Furnival's Inn. Old London Inn of Chancery. It was on the N. of Holborn, between Brooke Street and Leather Lane. It dated from the reign of Henry IV, was rebuilt in the 16th century, and ceased its career as an inn in 1818, when it was again rebuilt. Dickens wrote the greater part of *Pickwick* when resident here. Its site is approximately that of the premises of the Prudential Assurance Co., built in 1879.

Furrier. Name for a dealer in furs. The trade itself is sometimes known as *furriery*. See *Fur*.

Furring. Term applied to the deposition in kettles and boilers of lime salts from the hard water boiled in those vessels. Fur is objectionable because, being a very bad conductor of heat, it impedes the transmission of heat from the fire to the water. The practice of placing a marble in the kettle is intended to prevent, by the constant movement of the marble, the deposition of a compact layer of the calcium carbonate on the bottom and sides of the kettle. Fluids used in preventing incrustation in large boilers contain caustic alkalis (to soften the water) and a tannin containing material which has the property of preventing the aggregation of the precipitated lime salts.

Furrow. Trench or hollow made by the plough. It comes from an Anglo-Saxon word, and has been extended to describe hollows of other kinds, such as furrows on the face. See *Plough*.

Furse, CHARLES WELLINGTON (1868-1904). British painter. Born at Staines, the son of the Rev. C. W. Furse, and educated at Haileybury, he studied art at the Slade

School under Legros, and in Paris under Julien. In open-air portraiture he achieved rapid success, notably in *The Return from the Ride*, 1903, and *Diana of the Up-lands*, 1904, a portrait of his wife, both in the Tate Gallery, *Timber Haulers and Cubbing with the York and Ainstey*, 1904. A sportsman himself, he easily caught the atmosphere of country life, composing on a robust scale in bold, luminous masses of colour. He was elected A.R.A. in 1904, and died Oct. 17, 1904.

Furse, DAME KATHARINE (b. 1875). British organizer. She was born at Bristol, Nov. 23, 1875,

the daughter of John Addington Symonds, and educated privately; she married C. W. Furse, the painter, in 1900. On the outbreak of the Great War she developed the activities of the Voluntary Aid Detachments established in 1909 in connexion with the Territorial Force, and went to France to organize the work there. Returning in the spring of 1915, she became commandant-in-chief of the V.A.D.'s. In 1917 she resigned this appointment and became director of the Women's Royal Naval Air Service. She was created G.B.E. in 1917.

Furse, SIR WILLIAM THOMAS (b. 1865). British soldier. Born April 21, 1865, he was the son of the Rev. C. W. Furse, arch-



Sir W. T. Furse,
British soldier

deacon of Westminster. Educated at Eton, he entered the Royal Artillery in 1884, and in 1893 became a captain. In India he was on the staff of Lord Roberts, 1891-93, and having passed through the Staff College, he was attached to the headquarters of the army, 1897-1902. He served also on the staff in S. Africa, 1900-1, after which he was on the staff at home from 1902-14. In 1915 Furse went to France in command of a brigade. In 1916 he was made master of the ordnance and a member of the army council, resigning at the end of 1919. He won the D.S.O. in S. Africa, was knighted in 1917, and made a lieutenant-general in 1919. His brother, Michael Bolton (b. 1870),

was bishop of Pretoria, 1909-19, when he was appointed bishop of St. Albans.

Fürstenberg. Name of an old German family. It is taken from Fürstenberg, a place in the Black Forest, where the family originally resided. The castle here was built by them about 1200, after they had inherited the lands of the Zehringen family. The Fürstenbergs split up into a number of branches, of which three were raised to the rank of princes of the empire. They lost their position as rulers in 1804 when the principality of Fürstenberg was mediatised, but the family continued prominent. The family is now represented by three branches, one settled at Donaueschingen, another at Königshof in Bohemia, and a third in Lower Austria. Maximilian Egon (b. 1863), prince of Fürstenberg, the head of the Donaueschingen line, was one of the intimate friends of the ex-kaiser William II.

For several centuries Fürstenbergs have been prominent in public life in Germany and Austria, whether as soldiers, ecclesiastics, or politicians, and most of them have borne the Christian name of Egon. Two notable Fürstenbergs were bishops of Strasbourg. Franz Egon was made bishop in 1663 and held the see until his death in 1682. His brother, William Egon, succeeded to the bishopric and was made a cardinal. Both brothers were soldiers before they became prelates. Those members who are not of princely rank are known as *landgraves*.

Fürstenbund (Ger., league of princes). Term specially applied to the league formed by Frederick the Great in July, 1785, to maintain the existing constitution of the Empire as established by the treaty of Westphalia. The emperor Joseph II was pressing a scheme for securing Bavaria for himself and in exchange giving the Netherlands to the Bavarian ruler. Frederick persuaded the rulers of Saxony and Hanover—George III of Great Britain—to combine with him against this policy, and the league was joined by the elector of Mainz, the rulers of Brunswick, Baden, Hesse-Cassel, Mecklenburg, and others. It succeeded in stopping Joseph's project, but did not long survive the death of its mainstay, Frederick.



Max Fürstenberg,
German prince

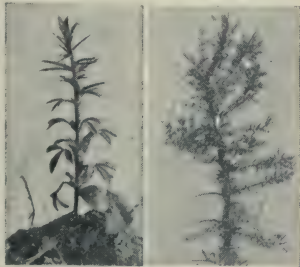
Fürstenwalde. Town of Germany, in the Prussian prov. of Brandenburg. It is on the Spree, 92 m. E.S.E. of Berlin. A bishop's seat until 1571, its chief building is the cathedral. One of the richest towns in the prov., it owns a forest of about 12,000 acres. The making of beer, vinegar, and starch, and iron-founding are important industries. Pop. 22,626.

Fürth. Town of Germany, in Bavaria. A rly. junction, 5 m. N.W. of Nuremberg, it stands at the confluence of the rivers Pegnitz and Rednitz. Its chief buildings are S. Michael's Church and the town hall, as well as the ruins of a castle; there are other churches and several schools, but nearly all its edifices are modern. Its trade and population grew considerably between 1885 and 1914, its chief industries being printing and attendant trades, the making of machinery, toys, and fancy goods. There is also a trade in agricultural produce, and an annual fair is held. It has a large Jewish population. At one time, under the burgesses of Nuremberg and later the bishops of Bamberg, Fürth became part of Bavaria in 1806. Pop. 66,553.

Furunculus (Lat.). The acute localised inflammation of a skin follicle. See Boil.

Fury and Hecla Strait. Narrow channel of the Arctic regions, separating Baffin Bay from Melville Peninsula on the S. It contains numerous islands and communicates with the Gulf of Boothia on the W., and with Fox Channel on the E. Parry, the Arctic explorer, discovered the strait in 1822.

Furze or **GORSE** (*Ulex europæus*). Shrub of the natural order Leguminosae. It is a native of



Furze. Left, seedling with leaves, *Ulex europæus*. Right, dwarf furze, *U. minor*.

Europe, the Canaries, and Azores. It varies in height from 2 ft. to 8 ft., according to situation, and is densely covered with sharp evergreen spines, which are mainly transformed leaves. Young seedlings have trefoil leaves, and a single leaflet is sometimes attached to the long spines of older plants. The bright yellow, scented

flowers are borne on the larger spines, which are twigs. The two-lobed calyx is yellow, like the petals, but covered with short black hairs. The black pods are about $\frac{3}{4}$ in. long, and hairy. The seeds bear an oily attachment, known as an elaiosome, which is relished by ants, who convey the seeds to their runs to feed upon this part. By this agency the distribution of the plant is effected. The dwarf furze (*U. minor*), smaller in all its parts, is native only in Belgium, France, and Britain.

Fusagasugá. Town of Colombia, S. America, in the dept. of Cundinamarca. It stands at an elevation of 5,627 ft., 28 m. S.W. of Bogotá, and is locally known as the Cordilleran Paradise. A summer resort, it is one of the chief coffee-growing centres of the country. Pop. 13,443.

Fusan. Seaport of Korea or Chosen, belonging to Japan. It stands at the S.E. extremity of the Korean peninsula, on Broughton Strait, 7 m. from the mouth of the Nak-tong river, and is the S. terminus of the rly. from Seoul, distant about 280 m. Old Fusan is the native town and New Fusan is mostly inhabited by Japanese, who virtually control the trade.

Fusan is a treaty port, opened to foreign commerce in 1883. The harbour is sheltered and deep, and the largest vessels afloat can approach the quay. Steamers ply to and from Nagasaki, Port Arthur, Vladivostok, Shanghai, Chemulpo, and other ports, and the town has cable communication with Nagasaki. The trade is connected with cotton fabrics, raw silk, Japanese wares, hides, rice, dried fish, petroleum, and beans. Of the fisheries the principal catch is herring and cod. In 1917 the Korean rly. system, some 1,000 m. in length, was put under the control of the S. Manchurian Rly. It extends from Fusan to Changchun in the Kirin prov., a junction for the route to

Petrograd via Harbin. Since the annexation of Korea by Japan in 1910, the Japanese have been improving the harbour, making roads, and building water and electricity works. Pop. 47,000.

Fusaro. Lagoon of Italy. The ancient Acherusia Palus, it is in the prov. of Naples, 11 m. W. of Naples, and is separated from the sea by alluvial sand-hills. The Romans made an outlet for it in the 1st century A.D. During the Empire its banks were studded with villas, of which there are many remains, besides tombs. Then, as now, the lake was famed for its oysters.

Fuse (Dim. of fusee, from Fr. *fusil*, a gun). Means employed to ignite a detonator (*q.v.*). When a charge of explosive is to be fired instantaneously the fuse is made of quick-match. When such delay as enables the firing party to get to a safe dis-



Fuse. Electric fuse-box opened with "cartridge" in place

tance is needed, a safety fuse of fine gunpowder is used. For blasting purposes an electric fuse is sometimes used. It consists of a small copper case containing fulminating powder, to which the conductor terminals are secured. A fine wire, passing through the detonator, connects the terminals. When an electric current is switched on, the thin wire is heated by its passage and ignites the powder. In another type the fuse wire is omitted and the ends of the conductor wires are brought nearer together within the detonator; in this case the current, leaping across the gap, causes a spark which ignites the charge.

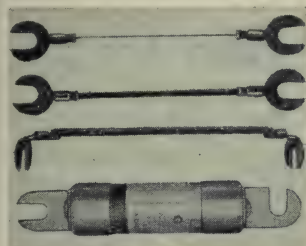
In the case of shells, a fuse forms part of the projectile, and acts at



Fusan, the Japanese port in the south-eastern extremity of Korea

the instant the shell grazes the target (percussion fuse), or it can be "set" to cause explosion of the shell during flight (time fuse). See Ammunition; Detonating Fuse; Explosives; Safety Fuse; Shell; Shrapnel.

ELECTRIC FUSE. The electric fuse is an important element in the transmission and distribution of electric current. In all practical



Fuse. 1. Bare wire fuse. 2 and 3. Asbestos-covered wires. 4. "Cartidge" variety (as shown in opposite page)

systems for the distribution of power it is necessary to provide something in the nature of a relief which will operate when excessive local stress or pressure threatens danger to the system. In a steam, water, or air system this relief is provided by safety-valves, supplemented frequently in the case of steam by fusible plugs.

In an electrical system the relief is mostly provided by fuses which are designed to carry the ordinary amount of current in a particular circuit, and to melt and break the circuit automatically should the current become so great as to heat the other parts of the circuit beyond the limit of safety. Hence the fuse is made of such materials and dimensions that its resistance is greater than that of an equal length of any other part of the circuit, and in consequence it is always when current is passing at a higher temperature than the

rest of the circuit, while, its melting point being low as compared with that of the other materials of the circuit, it is ready to give way first.

The material used for fuses is generally an alloy of tin and lead, bismuth being sometimes added to lower still further the melting point. A fine copper wire is sometimes used, while various special kinds of "fuse wire" are prepared by makers. It is important that the fuse, whatever it is, should be so long that when it goes there will be no risk of the formation of a spark across the space formerly occupied by the fuse—the current must be completely broken; also that the material should be such that it melts quietly without throwing splashes of molten metal where they may ignite anything and thus give rise to a fire. Hence the fuse is usually fixed between two hard brass clamps secured on a small slab of porcelain. Frequently the fuse is enclosed bodily in a porcelain tube or case, while the space about it is packed with some non-conducting material which will effectually prevent the passage of a spark or the formation of an arc between the interrupted terminals when the fuse "blows."

Fuselage. Central body of a tractor aeroplane. It is derived from the French *fusel*, as the original body of this type had a certain resemblance to a gigantic shuttle. The term fuselage is most properly applied to the clearly defined body of the tractor biplane, but it is used generally to describe the centre part or body of any machine. See Aeroplane, illus.

Fuseli, HENRY (1741-1825). Anglo-Swiss painter. Born at Zürich, the second son of Johann Kaspar Fuessli, artist, and educated for the Church, he had to leave Zürich owing to the enmity of a public official whom he had exposed. He came to England in 1765, and secured the good offices of Sir Joshua Reynolds. On his advice Fuseli studied in Italy from 1770-88, and then returned to England. In 1782 he produced his gruesome and notorious picture, *The Nightmare*. Nine pictures for Boydell's Shakespeare Gallery, and 47 for a Milton Gallery of his own, were his only other achievements. He became R.A. in 1790, lecturer on painting in 1799, and keeper in 1804. He died at Putney, April 16, 1825.



Henry Fuseli, Anglo-Swiss painter

Fusel Oil (Ger., bad spirits) or **AMYLIC ALCOHOL.** Volatile liquid present in the products of the alcoholic fermentation of saccharine liquids, especially those derived from potato starch. It is a complex liquid and varies according to the source of the alcohol, and the proportion obtained is influenced by the activity of the particular bacteria which form amylic alcohol. Fernbach has developed a process for increasing the yield of this alcohol, which is required in connexion with the manufacture of rubber by synthetic methods. As a rule, however, in commercial processes, methods by which the formation is stimulated are avoided, as its presence in potable spirits is undesirable. To remove even small quantities from whisky prolonged storage in wooden casks is needed. See Alcohol.

Fushiki or **FUSHIGI.** Seaport of Japan, on the island of Honshu. It stands on the W. coast, 30 m. N.E. of Kanazawa. Since 1889 it has been a free port. Pop. 19,000.

Fushimi. Town of Japan, on the island of Honshu. It is on the river Ujigawa, 5 m. S.E. of Kyoto, and 130 m. S.W. of Niigata. In Jan., 1868, a fierce conflict took place here between the Imperialists and the supporters of the Shogun. Pop. about 20,000.

Fushimi, PRINCE SAVANARU (b. 1858). Japanese prince and soldier.

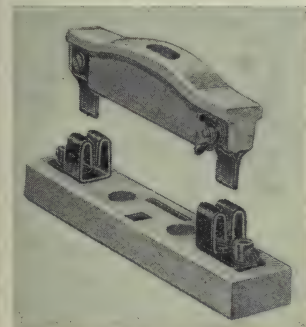
Born April 28, 1858, he was head of the oldest of the princely families of Japan. He served in the wars with China and Russia. He attended the funeral of King Edward in 1910, and was granted the title of marshal in 1915.



Prince S. Fushimi, Japanese soldier

Fushimi, PRINCE YOROHITO OF HIGASHI (1867-1922). Japanese prince and sailor. Born on Sept. 19, 1867, the son of Prince Kuniyue, he was educated partly in England, attending lectures at the Royal Naval College at Greenwich, and later at the Ecole Navale, Brest. He saw active service in the Chino-Japanese War of 1894 and the Russo-Japanese War. In June, 1918, he was appointed to the war council, and died June 26, 1922.

Fushun. Town of Manchuria, in the prov. of Shengking. It is noted for its coalfields, which are said to be unparalleled for thickness and volume of seams, and are estimated to contain 800,000,000 tons. The collieries belong to the South Manchuria Rly. Co.



Fuse. Porcelain holder, in which the fuse is embedded, so that if the latter melts there is no danger of fire

Fusibility. Name given to that physical property by virtue of which matter may be melted or rendered fluid if heated to a sufficiently high temperature under suitable conditions. It is obviously a very valuable and important property, as it is solely due to it that objects can be cast in metal. It thus constitutes very largely the foundation of the art of metallurgy. While all the metals are fusible they melt at very different temperatures, ranging all the way from -39°C . ($=70^{\circ}\text{F}$.), the melting point of solid mercury, to $1,740^{\circ}\text{C}$. or $3,167^{\circ}\text{F}$., the approximate temperature at which platinum melts. At whatever temperature the melting takes place it is always accompanied by the absorption of heat which becomes "latent" and a change of volume. In most cases this change is one of expansion, but bismuth, for example, contracts in volume on fusion. See *Liquation*; *Metal*.

Fusible Metals. Metal alloys which melt at comparatively low temperatures. Newton devised such an alloy; while one composed of 15 parts bismuth, 8 lead, 4 tin, and 3 cadmium, known as Wood's metal, will melt at 155°F ., and another (Rose's metal) composed of 8 parts bismuth, 8 lead, and 3 tin will melt at 203°F . Both these metals, therefore, will melt in boiling water. The "magic spoon" of the conjuror which melts in a cup of tea is made of such a metal. By varying the proportions of the constituents, alloys of tin and lead, or tin, lead, and bismuth, can be made which will melt at from 202°F . to 380°F . Some of these have an important use in the manufacture of fusible plugs for steam boilers. These plugs, being inserted in the furnace plates of a boiler, will melt if the plate, owing to any circumstance—shortness of water or scaling—becomes dangerously overheated, and, by permitting the steam to escape, may prevent a serious accident. They are also of use in electrotyping on account of their property of expanding on cooling, and so giving clean-cut impressions of moulds. See *Alloy*.

Fusil. French term for the infantry magazine rifle, e.g. the *fusil Lebel*; also a light form of flint lock musket formerly used in the British army. In 1857 a serjeant's fusil was issued weighing 8 lb. $10\frac{1}{2}$ oz. to fire the Enfield rifle ammunition, and in 1858 a smooth-bore fusil weighing 7 lb. $12\frac{1}{2}$ oz. was issued to serjeants of native Indian regiments. Probably the original was the *fusil mousquet* of Vauban, which was so contrived that in case

the flint did not strike fire, the powder might be ignited by means of a small match which was fixed to the breech. The word, derived from late Lat. *focile*, a steel for kindling fire, originally had the same meaning in French. See *Fire-arms*; *Flint Lock*; *Matchlock*.

Fusil. In heraldry, an elongated lozenge. A fusil may be pierced. A shield divided by diagonal lines crossing each other so as to form acute pointed lozenges is said to be "fusily." See *Lozenge*.

Fusilier. Formerly the designation of special bodies of troops equipped with a fusil or light flint lock musket at a time when the matchlock was the standard military fire-arm. It is now only the distinctive regimental name of certain corps of infantry who are armed exactly the same as infantry of the line.

The first mention of fusiliers occurs about 1643, when they were organized as companies during the 'Thirty Years' War. At that time they were mounted, and only differed from the carabiniers in that they were armed with the flint lock musket. Following the lead set by France, various European armies introduced these troops of fusiliers between 1670 and 1680 to act as an escort for the artillerymen, who at that time were hired by contract for the campaign, an escort being considered desirable not only to protect them from hostile attack, but also to keep a close watch on them in case of treachery. As the cannon were served with loose powder from open barrels, it was not safe for the escort to be armed with muskets requiring the use of burning match; consequently the fusiliers were detailed for this duty.

The general adoption of the flint lock musket as the standard military fire-arm made unnecessary the use of special troops as artillery escort, and, owing to the fusiliers having become accustomed to act as independent units, the regiments were largely employed as light infantry and not as line troops. The fusiliers were regarded as *corps d'élite* and the lowest commissioned rank was second lieutenant, the junior of whom took precedence of all ensigns; but at present they enjoy no privileges other than those of the infantry.

The senior fusilier regiment of the British Army is the Royal Fusiliers (City of London Regiment), formed in 1685. The Scots Fusilier Guards relinquished the title fusiliers in 1877 and became the Scots Guards. Other famous British regiments of fusiliers are

the Northumberland, Lancashire, Royal Scots, Royal Welch, Royal Inniskilling, Royal Irish, Munster, and Dublin Fusiliers. The distinctive uniform of British fusilier regiments is the bear-skin cap (often erroneously termed a busby) of similar design to, but smaller than, those worn by the foot guards. See *Army, British*; also *colour plate*.

Fusion (Lat. *fusio*, fusion). The change of state from solid to liquid form of a substance, occasionally spoken of as liquefaction. The temperature at which a solid melts cannot always be determined with great accuracy, especially in regard to such substances as pitch, glass, etc., which slowly change from the solid to the liquid state as the temperature rises. Though theoretically the fusion point of a solid is the same as the freezing point of the liquid form of the substance, the two temperatures do not always coincide in practice, chiefly because a substance may "over cool" before the change of state takes place. The fusion point of a solid varies only slightly with variation of pressure. See *Freezing Point*; *Melting Point*.

Füssen. Town of Germany, in Bavaria. It is situated on the left bank of the Lech, about 56 m. S.W. of Augsburg. It is a popular summer resort and dates from an early period, the Benedictine abbey of S. Magnus, it is said, having been founded here in 629. Its principal centre of interest is the 15th century castle of the bishops of Augsburg, which stands on an eminence overlooking the town. The church of S. Magnus, dating from 1701, was constructed on an older foundation, a Romanesque crypt. Near by is the Calvarienberg (3,130 ft.).

Fust or **FAUST**, JOHANN (d. 1466). German printer. With Johann Gutenberg, and Gutenberg's son-in-law, Peter Schoeffer, Fust,



Johann Fust,
German printer

From a print

who is not to be confounded with the Faust of German legend, was prominent in the introduction of typographical printing in Germany. He was a wealthy goldsmith of Mainz, and financed Gutenberg's printing office there. He foreclosed on a mortgage and carried on the business with Schoeffer, one of the masterpieces of this partnership being a Latin Psalter, 1457, the initial letters in which were printed in red and blue. Fust died in Paris of the plague.

Fustel de Coulanges, NUMA DENIS (1830-89). French historian. Born and educated in Paris, he studied for a time in Greece and then returned to France to teach and study history, especially that of the early ages. From 1860-70 he was professor at Strasbourg; after 1870 he lectured in Paris; in 1878 he was made professor of medieval history at the Sorbonne, and from 1880 until his death was director of the École Normale. Fustel was probably the most able, and certainly the most uncompromising, member of the band of historians who combated the theory that the early institutions of France were mainly of Teutonic origin. In six volumes he showed how the influence of Rome survived there, and how the Teutonic invaders did little more than fall under it. Fustel's best-known work, however, is *La Cité Antique*, published in 1864. The main idea of this book is that religion was the chief force in the development of the ancient states of Greece and Italy.

Fustian. Thick short-piled cotton fabric, mostly used for workmen's clothes. The term is applied to clothes of the nature of velvet, e.g. velveteen, moleskin, and corduroy. The early fustians seem to have been made of cotton or of cotton weft and linen warp. The manufacture of fustian was apparently introduced into England in the 14th century by the Flemings, the first English-made fustians being woollen. Spain and Italy were noted for their fustians, those made at Naples becoming so popular as to be specially described as fustian of Naples, a term which became corrupted into such strange forms as fustian apapes, fustian and apes, fustianapes, and fustniapes. The name fustian is said to come from *Postat*, near Cairo, where the stuff was made. Rum fustian is an old Oxford University "night-cap," a kind of egg flip. The use of the word "fustian" for pompous or unseasonably lofty language is due to the idea of stuffing or padding.

Fustic. Name given to two yellow dye materials known respectively as old fustic, obtained from the wood of *Morus tinctoria*, and young fustic from *Rhus colinus*. Both plants are grown in the West Indies, but young fustic is also found in southern Europe. The colouring matters from young fustic are called fustin and fisetin, whilst those from *Morus tinctoria* are morin and maclurin. In wool dyeing fustic is an important natural yellow dye.

Fusulina Beds. In geology, great thicknesses of limestone. Made up to a great extent of fossil

remains of chambered shells of Foraminifera, including species of *Fusulina*, they are well developed in carboniferous rocks of Russia and Ural Mts., and in Japan, China, and N. America.

Futa Jallon OR FOUTA DJALLON. Region of French W. Africa, forming the N.W. portion of French Guinea. Area, 42,000 sq. m. It is a mountainous country, rising in parts to over 5,000 ft., with fertile valleys, containing the head-streams of the Gambia, Senegal, and Niger rivers. Cattle, sheep, and horses are raised in large numbers, and cereals, coffee, and cotton are produced. The rly. from Kankan, on the Milo tributary of the Niger, and Karussa on the Niger, to the port of Konakry, touches Timbo, the capital, in the S. part of the territory. The inhabitants are Fulahs, who settled here in the 16th century. They are Mahomedans, and number about 700,000. See Guinea, French.

Futrelle, JACQUES (1875-1912). American novelist. Born in Pike co., Georgia, Futrelle had a wide experience as journalist, and was for some years a theatrical manager in America. He wrote a number of light novels and some clever detective tales, among which may be mentioned *The Thinking Machine*, 1907; *Elusive Isabel*, 1909; *The Professor on the Case*, 1909; *The Lady in the Case*, 1910; *The Diamond Master*, 1912; and *Blind Man's Buff*, 1914. He was drowned in the wreck of the *Titanic* April 15, 1912.

Future (Lat. *futurus*, about to be). In grammar, the tense used to indicate that something will be or will take place. In modern languages it is expressed by the aid of auxiliaries or periphrases: I shall go, *ich werde gehen*. French *aimera* is really a corruption of *amare habeo* (I have to love), a method of formation which probably underlies the Latin *amabo*.

Future. Business term for goods to be shipped at some future time. Merchants and others speculate in futures, especially of corn, cotton,

hops, etc., variations in freight rates and in market conditions generally providing an ample gambling element. The word is confined in practice to foreign produce.

Futurism. Name given to an art movement which originated at Turin in Italy in March, 1910. It owed its inception mainly to F. T. Marinetti, the Italian poet. It preached the renovation of Italian art. It declared that art could live only by its emancipation from the past. It repudiated tradition, academic training, museums, picture galleries, the art of previous ages, and other similar "fetters" on art progress. In literature, experiments were made by Marinetti and others to convey emotions directly to the reader's eye by the use of varying types, suggestive arrangements of spacing and lines, and other devices. An account of scenes in the Balkan wars was written by Marinetti and read to a phonetic accompaniment of drums, crashing metal instruments, etc. It endeavoured to introduce into the art of painting a "poetry of motion," whereby, for example, the painted gesture should cease to be a fixed momentary thing and become actually "a dynamic condition." The weakness of the proposition lies in the fact that kinetics cannot be realized by static qualities. Successive scenes witnessed, for instance, from a train in motion were depicted on a canvas as though they had been



Futurism. *La Modiste* (the dressmaker), a Futurist painting by Gino Severini, exhibited at Paris in 1912

simultaneous, the result being confusion. This aim was further complicated by a sort of psychological bias which was expressed in the Futurists' effort to indicate, in the painting of a scene, not only the state of mind of the painter but also that of the person or persons depicted in the picture.

A picture, according to the Futurist manifesto, "must be a synthesis of what one remembers and what one sees." Thus a Futurist would paint not only what he saw before him, but would combine with it the recollection of previous scenes which lingered in his mind, and also attempt to give, in the same picture, some idea of the sitter's sensations. These sensations were to be represented by "force lines and rhythms." Also objects and personages were to be studied from all sides so that all aspects of things, visible and invisible, front and back, should be painted in a picture. The results were frequently mirth-provoking. The original Futurists included Marinetti and the Italian painters Boccioni, Carra, Russolo, Balla, and Severini. The first exhibition of Italian Futurist painting was held in 1911 in Paris, whence it was transferred to London in March, 1912. *See Art.*

Fyen. Variant spelling of the island of Denmark more generally known as Funen (*q.v.*).

Fyfe, HAMILTON (b. 1869). British journalist and author. Eldest son of J. Hamilton Fyfe, barrister and journalist, he was educated at Fettes College, Edinburgh. After varied service on *The Times*, he edited *The Morning Advertiser*, 1902-3, and *The Daily Mirror*, 1903-5. From 1905 until 1919 he was special correspondent of *The Daily Mail*, which he represented, during the Great War, in France, Russia, Rumania, Italy, Spain, Portugal, and the U.S.A. He wrote one of the famous Amiens dispatches published in *The Times* of Aug. 30, 1914, giving the first news of the reverse at Mons. He was hon. attaché, British war mission to the U.S.A., 1917, and in charge of British propaganda in Germany, July-Nov., 1918. In addition to *The New Spirit* in Egypt, 1910; *The Real Mexico*, 1914; and *The Meaning of the World Revolution*, 1919, he has written several plays and novels, including *The Widow's Cruse*, 1920. He became editor of *The Daily Herald*, 1922.

Fyfe, CHARLES ALAN (1845-92). British historian. Born at Blackheath, Dec. 3, 1845, he was the son of a doctor. Educated at Balliol College, Oxford, he served

for some years as fellow bursar of University College. A barrister, he acted as correspondent for *The Daily News* in the Franco-Prussian War, but he is chiefly known by his *History of Modern Europe*, embracing the period from the French Revolution to 1878, 3 vols., 1880-90. Politically, he was a strong radical. He died Feb. 19, 1892.

Fylde. Name given to the district in Lancashire between the estuaries of the rivers Wyre and Ribble. It is a flat area devoted mainly to agriculture.

Fylfot. In heraldry, the cross gammadion, or crampooned cross. It is celebrated in occult science, and is a modification of the extremely ancient Oriental Swastika (*q.v.*). Each limb is terminated by a crutch-like protrusion to the right. This



Fylfot in heraldry

is the lucky or beneficent fylfot; if the projections are reversed it is a "black" or evil sign. The word is probably a corruption of fill-foot, meaning a space in a painted window which fills the foot.

Fyne. Sea loch of Argyllshire, Scotland. It extends S.W. and S. for 40 m. from above Inveraray to its mouth at the Sound of Bute, with a breadth of from 1 m. to 5 m. Its arms are E. Loch Tarbert (with Tarbert village), Loch Gilp (with Lochgilphead, Ardrishaig, and the Crinan Canal), Loch Shira, and Loch Gair.

Fyrd (A.S., army). Name given to the army, or rather militia, of England in Anglo-Saxon times. It is first mentioned in the Anglo-Saxon Chronicle as existing about 600, and consisted apparently of all able-bodied men. They were called out in times of danger by the shireman or sheriff, each shire having its own fyrd. In the 7th century laws laid down penalties for neglecting this duty. Called fyrdwite, the fines varied, according to the rank of the offender, from forfeiture of his land to a moderate fine.

The fyrd was reorganized by Alfred the Great and was used to fight the Danish invaders. It survived the Norman Conquest, but was not used abroad, the idea that it was a defensive force only being very strong. It did good work at the battle of the Standard and in other fights against the Scots and Welsh, but from about the time of Edward I its place was taken by commissions of array and the militia. *See Militia.*

Fysh, SIR PHILIP OAKLEY (b. 1835). Australian politician. Born in England, March 1, 1835, he settled in Tasmania and was elected to the legislative council in 1866. Treasurer in Kennerley's ministry, 1873-75, he became premier, 1877-78, and again, 1887-92. A delegate for Tasmania to the federal conventions of 1891, 1897, and 1898, he held a similar position in the Federal Council of Australasia, and was one of the delegates to London in 1900 in connexion with the formation of the Commonwealth of Australia. He was knighted in 1897. Postmaster-general for the Commonwealth, 1903-4, he then became minister without portfolio and retired in 1910.



Sir Philip Fysh, Australian politician

Fyt, JAN (1609-61). Flemish painter. Born at Antwerp, he studied under Jan van Berch. He achieved great renown as an animal painter and was employed by Rubens, Jordaens, and De Croyer to introduce animals, especially dogs, into their pictures. Most of the European galleries contain examples of his art. He died at Antwerp.

Fytton or FITTON. Name of an English family associated for many generations with Gawsorth (*q.v.*), Cheshire. Most of the monuments in the Norman church at Gawsorth are to the memory of members of this family. The first Sir Thomas Fytton lived in the time of Edward II. Sir Edward Fytton (1527-79) was lord president of Connaught, 1569-72; since the appearance of Thomas Tyler's edition of Shakespeare's *Sonnets* in 1880, his grand-daughter Mary, maid of honour to Queen Elizabeth and mistress of William Herbert, 3rd earl of Pembroke, has figured as the Dark Lady (*q.v.*).

Sir Edward Fytton, who was on the side of Charles I at Edgehill, was killed at the siege of Bristol in 1643. Sir Alexander Fytton became lord chancellor of Ireland, lost the Gawsorth estates by litigation, was attainted after the abdication of James II, and died at St. Germain in 1699. *See Life of William Shakespeare, S. Lee, revised ed. 1915; The "Dark Lady" of Gawsorth, C. H. Herford, in The Manchester Guardian, Feb. 3, 1920.*

F.Z.S. Abbreviation for Fellow of the Zoological Society.



G. Seventh letter of the English and Latin alphabets.

It is a soft guttural or throat sound, the corresponding hard letter being k (c). It was a later addition to the Latin alphabet, being a modified form of C, which had hitherto done duty for the sounds of both C and G. In English it has two sounds, the one hard, as in gate, the other soft, mostly before e, i, and y, as in gender, ginger, gypsy. In the word gaol also it is pronounced as j. Before n it is mute, as in gnat, reign, or lengthens the preceding vowel as in resign. The combination gh, when initial, corresponds to the first value of g, as in ghost; when medial, it is mute, as in brought, and sometimes when final, as in bough, though it often has the sound of f as in rough, enough. See Alphabet; C; Phonetics.

G. Fifth note of the major scale of C. It is a perfect fifth above C, and is known as the dominant of the key of C. The treble clef sign

was originally a form of the letter G and gives the name G to the line of the musical stave round which its central curl passes. See Clef; Stave.

Gabardine. Textile fabric made of wool or cotton. Of a somewhat finer texture than serge, it is extensively used as a dress material, and also, when waterproofed, for raincoats.

Gaba Tepe, LANDING AT. Australian operation in Gallipoli. As part of the Allied operations to open the Dardanelles, the force known as the Australian and New

Zealand Army Corps, under Birdwood, sailed from Mudros, April 24, 1915. Reaching the Gallipoli coast early next morning, they began landing on the beach designated Z, afterwards called Anzac, about 2 m. N. of Gaba Tepe. The beach is a narrow strip of sand, 1,000 yds. long, with small headlands at either end, and backed by high cliffs forming the seaward termination of Sari Bair (Bahr), a hill, 971 ft., dominating the district. Leaping from the boats, the Australians of the 3rd Brigade, under Col. Sinclair MacLagan, put the Turks to flight with the bayonet, and advanced in open order up the cliffs. The 1st and 2nd Australian Brigades thereafter disembarked,

and by 2 p.m. 12,000 men and two batteries of Indian mountain artillery were ashore.

Confused fighting took place at first, some of the attackers advancing too far inland, but a position was taken up extending from a mile N. of Gaba Tepe to the high ground over Fisherman's Hut. The broken ground and thick scrub added to their difficulties. The Turks, who had been strongly reinforced to the extent of 20,000 men, struck at this whole line for four hours, but were repulsed with great loss by the Anzacs, who now included New Zealanders, and were supported by the fire of the warships. Determined efforts made later by the



Gaba Tepe, Gallipoli. The hill which was stormed by the Australians and New Zealanders, April 25, 1915

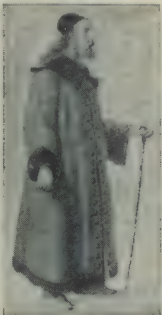
enemy against the 3rd Brigade in particular were beaten back. During the nights of the 25th and 26th the Turks delivered repeated assaults, but the Anzac line held firm. Meanwhile the position was entrenched, and ammunition, water, and supplies were brought up. On April 28 and 29 four battalions of the Royal Naval Division reinforced the Anzacs. See Gallipoli, Campaign in.

Gabbro. Rock, somewhat similar in texture to granite, with a speckled or mottled appearance. Gabbro consists usually of plagioclase felspar, augite (*q.v.*), and often olivine (*q.v.*), while many common varieties have varying proportions of iron and magnesium compounds. In the Inner Hebrides, Sweden, Norway, and Canada these rocks are common.

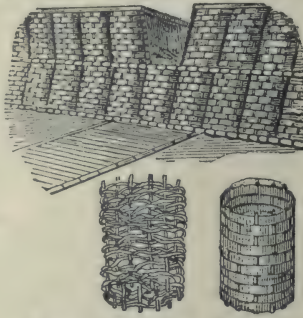
Gabelhorner. Cluster of mt. peaks, Switzerland, forming part of the Matterhorn group. The Ober-Gabelhorn, to the E. of the Grand Cosnier, rises 13,365 ft. The Unter-Gabelhorn, near Zermatt, has an alt. of 11,150 ft., and like the Ober-Gabelhorn, is difficult of ascent. See Alps.

Gabelle. French word for an indirect tax, in ordinary use confined to the tax on salt. Salt was a state monopoly, and almost from its imposition before 1300 to the Revolution the tax on it was most oppressive, every family being compelled to purchase a weekly minimum of salt. Its incidence varied from province to province; one or two were exempt from the burden. In the others the price of salt was fixed by royal officials. At one period the prisons of Normandy were filled with persons unable to pay this imposition. One of the grievances which contributed to the Revolution, it was abolished in 1790.

Gaberdine OR **GABARDINE** (Span. *gabardina*, smock, coarse frock). Loose garment, usually of rough, dark material, reaching to the ankles and girt with a cord. It was worn in the Middle Ages by pilgrims and mendicants, in which connexion the Scots word *gaberdunzie*, a beggar, is noteworthy, and came to be identified chiefly with the Jews, who wore flowing robes of this type. The



Gaberdine, as worn by Jews



Gabion. Interior slope of parapet showing brushwood gabions and fascines. Below, single gabions of, left, brushwood; right, iron bands

gaberdine was probably never a compulsory dress for the Jews.

Gabès OR **CAEES** (anc. *Syrtris minor*). Gulf of Tunisia. On the S.E. coast, it extends between the Kerkenna Islands on the N., the Circinae Islands of the Romans where Hannibal and Marius took refuge, and Jerba (Djerba) Island on the S. The latter has a pop. of about 60,000 of Berber origin, and contains numerous ruins, notably of El-Kantara, the ancient Meninx. Sponge-fishing is carried on in the gulf. The chief towns on its shores are Sfax and Gabès, the former the outlet for the phosphate deposits at Gafsa.

Gabès. Port and military station of Tunisia. On the Gulf of Gabès, it is the ancient Tacape. It is 205 m. by rly. S. of Tunis and 90 m. by rly. S.S.W. of Sfax. An extension of the line to Medenine is under consideration. The surrounding country is semi-desert. W. of Gabès are salt lakes or shats, extending for nearly 250 m. to within 50 m. of Biskra. There is trade in dates, oil, hides, and henna. Pop. about 20,000.

Gabinus, AULUS (d. c. 47 B.C.). Roman politician. As tribune in 67 B.C. he was the author of a law conferring upon Pompey supreme powers for three years to deal with the pirates of the E. Mediterranean. As governor of Syria, in accordance with the desire of the triumvirs, but contrary to an express decree of the senate, in 55 he restored Ptolemy Auletes to the throne of Egypt. On his return to Rome he was tried for extortion during his administration of Syria and for high treason in the matter of Ptolemy. Defended by Cicero, he was acquitted on the latter count, but was condemned on the former and sent into exile. Allowed to return to Rome by Caesar in 49, and sent on a mission to Illyricum, he was defeated by the Dalmatians near Salona, where he died.

Gabion. Cylinder with an open end which was widely used for strengthening military trenches and preventing the walls giving way in wet weather. Gabions may be constructed of almost any material capable of being bent or woven into cylindrical shape, brushwood, canvas, and wire netting being frequently employed. In the organized trench warfare which became such a feature of the Great War, the use of gabions of this nature was to a large extent superseded by wire netting.

Gable (old Fr., fork). Pointed or nearly pointed termination of a roof in the Gothic style. In classical architecture the gable is known as a pediment. The simplest form of gable is the triangular. This came into vogue in the Middle Ages, as a result of the high-pitched roof, and, indirectly, of the vault which required such a roof.



Gable. Top, example from an old house in Salisbury, c. 1380; below, from Eltham Palace, Kent; c. 1490

As Gothic tended towards luxuriance in detail, the severe triangular gable was enriched with ornaments such as crockets (*q.v.*) and finials (*q.v.*), and in the 16th century, the transition period of British architecture, the sides were formed in a succession of short curves. The latter form was adopted in the Netherlands, and is popularly known as the Dutch gable. The main façade of Holland House, Kensington, built early in the 17th century, is surmounted by a succession of these gables, consisting of two curves divided by a rectangular step on each side.

In another variety the sides are formed by a sequence of rectangular steps. When, as in the timber, or half timber, buildings of the 16th century, the gable projected some distance over the wall, the

edge or verge was ornamented with a barge-board. When the "hipped" roof, i.e. the roof made to slope back from all sides, was introduced in the latter part of the 17th century, the gable ceased to exist except in farmhouses and buildings in which the older architecture persisted. Recent building has seen a marked revival of the gable for small houses. *See* Architecture; House; Barge-board, *illus.*

Gablonz. Town of Czechoslovakia, in Bohemia. Situated on the Neisse, 7 m. E.S.E. of Reichenberg, in the district of the Riesengebirge, it is normally a busy manufacturing and export centre, the glass industry alone occupying many thousands of hands. It also possesses important printing and lithographic works. Other manufactures include cotton and woollen goods, bronzes, buttons, artificial pearls, and other jewelry and fancy articles. The town possesses good educational facilities—technical schools, in addition to a gymnasium. There is a service of electric tramways. Under the Austrian regime Gablonz was the headquarters of an administrative division of the same name, with an area of 82 sq. m. and a pop. of 90,000, nearly all German Roman Catholics; it is part of the German district of Bohemia. Pop. 29,605.

Gaboriau, ÉMILE (1833-73). French novelist. He was born at Saujon, Nov. 9, 1833. An acknowledged master of detective fiction, his clever story *L'Affaire Lerouge*, 1866, brought him instant fame. This was followed in rapid succession by *Le Dossier No. 113*, 1867; *Le Crime d'Orcival*, 1867; and other novels of the same type, which, though of slight literary value, hold the attention by their skilfully woven plots and abundance of sensational incident. He has attained a European reputation, despite these defects, as the originator of this type of detective fiction. Much of his work has been translated into English. He died Sept. 28, 1873. *See* Detective.

Gabriel (Heb., man of God). Name in Biblical and post-Biblical literature of one of the seven angels. He was sent to Daniel to explain the vision of the ram and the he-goat (Dan. viii, 15 ff.), and again to instruct him as to the "seventy weeks" (ix, 21 ff.). In the N.T. he is the divine messenger who predicts to Zacharias the birth of a son to Elizabeth (Luke i, 8-20), and to the Virgin Mary the birth of the Saviour (vv. 26-38). *See* Angel.

Gabun, GABON OR GABOON. Colony in French Equatorial Africa. It lies to the S. of Cameroons, and is bounded W. by the

Atlantic Ocean, E. by the French Middle Congo colony (Moyen Congo), and S. by the Belgian Congo. French occupation commenced in the estuary of the Gabun river in 1841, and in 1849 the settlement of Libreville was formed as a place of refuge for escaped slaves.

French influence gradually extended along the coast and into the interior, largely through the efforts of De Brazza and of French missions. In 1885 France took possession of the entire coastal region between Libreville and Brazzaville. In 1894 the boundaries between Cameroons colony and the French Congo regions were determined, but in 1911 Germany demanded, and received, as compensation for her recognition of the position of France in Morocco, a block of territory, the greater portion of which was taken from the Middle Congo and Ubangi-Shari-Chad colonies.

The present area of the Gabun Colony is 167,773 sq. m. It is administered by a lieutenant-governor, aided by an administrative council, subject to the governor-general of French Equatorial Africa, and contains vast forests and a large variety of tropical products, including rubber, palm kernels, and cocoa. The only rly. is a narrow-gauge line from Brazzaville, the chief town of the Middle Congo, to Mindouli; but a line is projected from Brazzaville to Pointe Noire, a port on the Atlantic coast, S. of Loango. Despite the lack of rly. communication there is a considerable trade along the rivers and through the ports of Libreville, the capital, Cape Lopez, Sette Gama, Mayumba, and Loango. The climate of the colony is unhealthy in the coastal regions, sleeping sickness prevailing, but comparatively healthy in the elevated interior. Pop. 259,582; 659 are Europeans.

Bibliography. *Trente mois au continent mystérieux*, Payeur-Didelot, 1899; *L'Expansion coloniale au Congo français*, F. Rouget, 1906; *Le Congo français*; la question internationale du Congo, F. Chailaye, 1909.

Gabun. Estuary in the N. of the Gabun colony in French Equatorial Africa. It penetrates 40 m. inland and has a width of from 6 to 12 m. On the N. bank is Libreville (*q.v.*). Large vessels can ascend the estuary.

Gad. Seventh son of Jacob, by Zilpah the handmaid of his wife Leah (Gen. xxx, 10, 11). He had seven sons at the time he went down to Egypt with his father and brothers.

Gad is also the name of a prophet who acted as a counsellor to David (2 Sam. xxiv, 11; 2 Chron. xxix, 25), and wrote a history of his reign (1 Chron. xxix, 29); and of

an Oriental divinity, regarded as the bringer of good fortune.

Gadag. Town and sub-division of Bombay, India, in the dist. of Dharwar. The area of the sub-division is 699 sq. m. Gadag town trades in cotton and silk, and contains remains of temples.

Gadara. Ancient town of Palestine, included in the Decapolis. It stands among the hills on the E. side of the Jordan, 6 m. S.E. of the Lake of Tiberias. Founded by Greeks, it was captured by Antiochus III, 218 B.C., and by Alexander Jannaeus, 100 B.C., when it was nearly destroyed. Pompey rebuilt it about 65-63 B.C., and it became friendly to Rome. It suffered from Jewish aggression in A.D. 66-70, but flourished thereafter until the Mahomedan conquest. It is mentioned in Mark v, 1, in connexion with the Gadarene swine. Extensive ruins include remains of two theatres, and a colonnade; the tombs in the neighbouring cemetery are remarkable.

Gaddi, TADDEO (c. 1500-66). Italian painter. Born in Florence, he studied first under his father, Gaddo Gaddi, and under his godfather, Giotto. Few of his works survive. An altarpiece, *The Virgin and Child*, is in Berlin, and his fresco *The Last Supper*, in the church of Santa Croce in Florence. *The Triumph of S. Thomas Aquinas* in Santa Maria Novella, Florence, attributed to him, has been ascribed to a Siennese painter. Deeply imbued with the spirit of Giotto, Gaddi maintained that master's tradition in painting.

Gade, NIELS WILHELM (1817-90). Danish composer. Born at Copenhagen, Feb. 22, 1817, he became a violinist in the royal orchestra. In 1840 his overture *Nachklänge aus Ossian* brought him into notice as a composer. He assisted Mendelssohn in conducting the Gewandhaus concerts at Leipzig, but in 1848 returned to Copenhagen and devoted himself to composition and conducting, being *Kapellmeister* (director of the court orchestra), and professor and director of the musical union. He died Dec. 21, 1890. Gade's compositions include orchestral and chamber music, and cantatas.

Gad Fly (*Tabanus bovinus*). Two-winged fly nearly an inch in length, exceedingly troublesome to cattle and horses in summer-time. It is frequently confused with the bot fly (*q.v.*), which is entirely different in its habits. The bot fly in its early stages is an internal parasite, but the larva of the gad fly lives in the soil. The bot fly in its perfect state frequents beasts only to deposit its eggs on them,

for its mouth parts are incapable of sucking blood; the gad fly, on the other hand, has no intention of making them hosts for its progeny, but the female stabs them with her proboscis and sucks their blood.

Gadget. Slang term for any small part of a piece of machinery, of an aeroplane, airship, etc., the exact name of which is not known by the person speaking.

Gadolinite. One of the rare earths, the first to be discovered. Investigated by J. Gadolin, the Swedish chemist, in 1794, it was shown by Ekeberg three years later to contain yttrium and by other chemists a number of other exceedingly rare substances. It is a greenish black mineral and is chiefly found in Llano county, Texas, Ytterby in Sweden, and Hitterø and Risør in Norway. *See Rare Earths*; Yttrium.

Gadolinium (Gd.) Element of which the oxide associated with terbium was discovered by Marignac in 1880. These two rare elements are found in gadolinite, samarskite and orthite. The double magnesium nitrates of terbium and gadolinium are crystallised together, the gadolinium salt being the more soluble.

Gadow, HANS FRIEDRICH (b. 1855). Zoologist. Born in Pomerania, Germany, March 8, 1855, he was educated at Frankfort-on-Oder and at the universities of Berlin, Jena, and Heidelberg. He then settled in England, became naturalised, married an English lady, and in 1880 secured an appointment in the natural history department of the British Museum. He left that in 1882 and in 1884 was made Strickland curator and lecturer on zoology at Cambridge. Gadow's books include *A Classification of Vertebrata*, 1898; *Amphibia and Reptiles in The Cambridge Natural History*, 1901; *Through Southern Mexico*, 1908; and, with A. Newton, *A Dictionary of Birds*, 1893-96.

Gadsby, HENRY ROBERT (1842-1907). British music composer. Born in London, Dec. 15, 1842, he became a chorister in S. Paul's Cathedral. Largely self-taught, in 1884 he became professor of harmony at Queen's College, London, and afterwards at the Guildhall School of Music. His compositions, which include an orchestral scene, *The Forest of Arden*, 1886, several overtures, part songs, and church music, show a high degree of talent. He died Nov. 11, 1907.

Gadsden. City of Alabama, U.S.A., the co. seat of Etowah co. It stands on the Coosa river, 57 m. N.E. of Birmingham, and is served by the Louisville and Nashville and other rlys. Lumbering and mining

are carried on in the locality, and the city has foundries, machine shops, lumber and steel mills, wagon works, and door and sash factories. Gadsden was settled in 1843, and incorporated in 1867. Pop. 13,325.

Gadsden, JAMES (1788-1858). American soldier and politician. Born at Charleston, S. Carolina, May 15, 1788, he was educated at Yale and entered the army. After a long and distinguished military career, which began with the war of 1812, he was appointed minister to Mexico, and in 1853 successfully negotiated the treaty called the Gadsden Purchase (*q.v.*). He died at Charleston, Dec. 25, 1858.

Another member of this family was Christopher Gadsden (1724-1805). A prominent man in S. Carolina, he took part, both in the forum and the field, in the struggle for independence. After its conclusion he was one of the leading men in S. Carolina until his death, Aug. 28, 1805.

Gadsden Purchase, THE. Name given to territory which the U.S.A. obtained from Mexico in 1853. The sale was negotiated by James Gadsden, and amounted to 45,500 sq. m. This is now part of New Mexico and part of Arizona, being the region bounded by the Gila, Rio Grande, and the Colorado river. The price paid was £2,000,000.

God's Hill. Village of Kent, famous as the residence of Charles Dickens. It is 2 m. from Rochester, on the road to Gravesend. The home of the novelist was God's Hill Place (*see Dickens, illus.*), a red brick

house near the Sir John Falstaff. Shakespeare (1 Henry IV) makes Falstaff meet the men in buckram in the road by here. Gadshill is the name of a character in the play.

Gadwall (*Chaulelasmus streperus*). Species of duck which is found in many parts of Europe, Asia, Africa, and North America. It is rare in Great Britain, except in Norfolk, where it is protected, and breeds in fair numbers. It resembles the common mallard, and is an excellent table bird. *See Duck*; Mallard.

Gaea or **Gæ.** In Greek mythology, the earth goddess. The daughter of Chaos, she was the mother of Uranus (Heaven), and Pontus (Sea), and by the former of the Titans. She represented the productive power of earth, bringing forth from her bosom and nourishing all living things. Her Roman counterpart, Tellus, was associated with a male divinity, Tellumo.

Gaekwar. Title borne by the ruler of Baroda. In reality it is the family name of the house that has governed this state since the early part of the 18th century. The word is derived from a native word meaning a cow. *See Baroda.*

Gael. Name applied to the members of the Gaelic branch of the Celtic race, and especially to the Celtic people of the Scottish Highlands. The word in Gaelic itself is *Gaidheal*, pron. approximately gale, and in an earlier form was Goidel; contrary to old belief, it is unconnected with Gaul, or Lat. *Galli*, Gauls. *See Celt.*

GAELIC LANGUAGE AND LITERATURE

Magnus Maclean, Author of *The Literature of the Celts*

There are articles on the various languages akin to Gaelic, e.g. Breton; Erse. *See also Celt*; Philology; Wales

Gaelic, the language of the Gael belongs to the European branch of the Indo-European family. Philology classifies the languages of the European branch into: (1) Greek, Latin, and Celtic in the middle and S. of Europe; (2) English, German, and Norse in the N.; and (3) Russian and Old Prussian in the E. In Greek and Roman times the Celts occupied the middle of Europe and their language has closer affinities with Greek and Latin than with English, German, or Norse.

Celtic itself now stands as the name for two groups of dialects distinct from each other, but closely related—the Gadhelic and Brythonic, the former comprising Irish, Manx, and Scottish Gaelic; and the latter, Welsh, Cornish, and Breton. They are also known as the Q and P groups in accordance with a well-marked linguistic dis-

tinction which differentiates them. Though Irish, Manx, and Scottish Gaelic are all derived from the ancient Gaelic, the original name is now almost exclusively restricted to the Gaelic spoken in the Scottish Highlands.

For three centuries, from the 5th onwards, the language and literature of Gaelic Ireland and Gaelic Scotland were virtually the same. The Gaels had come from Ireland into Scotland. But after the Norsemen began their raids, intercourse between the two countries was interrupted, and this in time, under Pictish and Norse influences, led to a divergence in the speech—a process which the Reformation accentuated, so that Irish and Gaelic are now separate dialects.

The beginnings of Gaelic literature date back to the 5th century A.D. But even before then, in pagan times, there existed the materi-

for its most characteristic productions. There were the rich and abundant Sagas, or prose romances transmitted by oral tradition. What is known as the Heroic cycle, about the opening of the Christian era, was really the golden age of Gaelic romance. Before this there had been a mythological cycle, and after, the Ossianic cycle (3rd century A.D.), the hero of which has continued to inspire the classic poetry of the Gael down to the modern days.

The first cycle deals with ancient myths; the second with the famous Cuchullin romances, greatest of which is the *Tain Bo Chualigine*; the third with the tales of Fionn, his son Ossian, and the Fianna. The earliest records of them are to be found in the great Middle Age MSS., *Leabhar na h'Uidhre*, and the Books of Leinster, Ballymote, Lecain, and Lismore. The most valuable document in Gaelic literature is this

R Och con. uin. n. l. f. Coi mananar
me tpi. j. q. t. mo. o. t. a. t. i. m. o. o. co
comnanacag. monmuc co n. f. a. f.
f. t. p. i. p. u. i. f. t. e. m. o. o. m. a. n. e. n. a. f. n. a.
coi tmuice n. o. p. a. o. p. a. p. a. e. l. e. a. co. a. l. p. a. t.
n. o. l. e. b. l. a. t. e. t. m. u. i. c. e. i. f. f. l. o. e. m. a. f. n. a. c. o. n. u.
C. e. r. i. g. l. a. c. n. a. c. o. i. n. a. d. e. g. a. r. o. n. o. f. f. i. n. g.
d. o. i. b. f. i. n. n. o. l. o. e. a. t. i. n. t. i. c. h. i. n. a. c. u. i. b. e. a. d.
c. h. i. t. e. c. a. o. j. e. h. b. a. o. u. L. u. n. o. t. m. u. i. c. e.
i. f. f. c. o. f. f. i. n. g. r. i. l. a. n. o. u. i. n. m. u. c. c. i. t. p. u. n. p.

Gaelic. Facsimile of a passage from the Book of Leinster, a 12th century manuscript in Trinity College, Dublin. These lines tell of the hunting of a dangerous boar at Lough Con, in co. Mayo, by the dogs of Manannan mac Lir, and the bounds from Mod, now Clew Bay islands

Leabhar na h'Uidhre. Like its famous contemporary, the *Liber Hymnorum*, a book of ancient Latin and Gaelic hymns, it belongs to the 11th century, and is a compilation from earlier books now lost. It is the oldest exclusively Gaelic MS. in existence.

At the dawn of letters among the Gael, S. Patrick figures as the author of two letters in Latin, the *Epistola ad Coroticum*; and a *lorica*, or hymn, in Gaelic, still extant, popularly known as S. Patrick's Breastplate. After him S. Columba and his followers inaugurated a period of great literary activity, which continued for two centuries. They wrote in Latin and Gaelic, using the Roman script and the Roman alphabet. With great assiduity they made Latin copies of books of the Bible, some of them beautifully decorated and illuminated. They also wrote hymns and lyrical poems having nature for their theme. Many of these, including S. Patrick's and S. Columba's, are in the *Liber Hymnorum*.

During this early period the Gaels gave to the Continent evangelists and professors, who founded monasteries and wrote books. In later times others fled thither from the Norse, carrying their MS. treasures. As a result, most of the early documents are in France, Italy, Switzerland, Holland, Belgium, and Germany. In all, excluding scores of Latin ones, there are 56 Gaelic MSS. abroad, of dates ranging from the 8th to the 19th century—the oldest at Milan and Cambrai. These also are Latin books, but they contain Gaelic glosses, poems, or other jottings of great interest. M. H. d'Arbois de Jubainville, in 1881, catalogued the MSS. in England, Ireland, and on the Continent, and Prof. MacKinnon did the same for those in Scotland. The latter are deposited in the Advocates' Library, the Universities of Edinburgh and Glasgow, and the library of the Society of Antiquaries.

The two oldest books of Gaelic Scotland now extant are Adamnan's *Vita Columbae* in Schaffhausen, and the Book of Deer, 9th century, with Scottish Gaelic entries of 10th to 12th, in Cambridge. After the latter comes the Book of the Dean of Lismore, containing a collection

of pre-Reformation Gaelic poetry taken down from 1512 to 1526 in Argyllshire. It has pieces from 56 authors, 11,000 lines, 800 Ossianic. Similarly the *Fernaig MS.* (Ross-shire), c. 1688-93, and the Books of Clanranald (Inverness-shire) represent the literary output of the 17th century.

From 1600 Scottish Gaels led the way in a great change which transformed the poetry of both Ireland and Scotland. Hitherto most of it had been Ossianic and in the ancient style. Mary Macleod was the first of the modern Highland bards to break away from the older order. She invented rhythms of her own, and from her time a great variety of new and melodious metres appear. John Macdonald and some others followed, and then came the golden age of Gaelic poetry around the Forty-five—a quick and splendid succession of bards. In the fifty years after Culloden are grouped nearly all the greater names of Highland poetry; among the many, Alexander Macdonald, John Mac-

Codrum, Duncan Ban Macintyre, Dugald Buchanan, Robb Donn, James Macpherson, and William Ross. Greatest of all were Macdonald and Macintyre, their descriptive powers being unique. The *Birlinn Chlann Raonuill* of the one, and the *Coire Cheathaich* and *Ben Dorain* of the other, rank as the masterpieces of Gaelic poetry.

The 19th century produced a succession of new bards, gifted, and of a high order, from MacLachlan, Livingston, and Maccoll on to Neil Macleod. It also furnished books of the choicest selections of Highland literature: John MacKenzie's *Beauties of Gaelic Poetry*, 1841; J. F. Campbell's *Popular Tales of the West Highlands*, 1860-62; and *Leabhar na Feinne*, 1872; Archibald Sinclair's *The Gaelic Songster*, 1879; Alex Cameron's *Reliquiae Celticae*, 1892-94; and Alexander Carmichael's *Carmina Gadelica*, 1900.

Gaelic poetry is mainly lyrical. There are no epic poems except Macpherson's *Ossian*. Songs of love, nature, chiefs and Prince Charlie, descriptive poems, hymns, eulogies, satires, epigrams and laments were more in the line of the bards. The best prose is represented in the Gaelic Bible, *Caraidnan Gaidheal*, and *Nicolson's Proverbs*.

The great modern interest in the language and literature dates from the publication of J. C. Zeuss's *Grammatica Celtica* in 1853, a work which revolutionised Celtic studies. Among Gaelic grammars those of Alexander Stewart, James Munro, H. C. Gillies, and Duncan Reid are chiefly used. There are large dictionaries by R. A. Armstrong, *The Highland Society of Scotland*, Alexander Macbain (etymological), and Ewen Macdonald; and a smaller one by Neil MacAlpine.

John Reid's *Bibliotheca Scoto-Celtica* contains a list of all books printed in Gaelic before 1832, the first being Carewell's *Translation of Knox's Liturgy*, 1567. Since then Donald Maclean has brought the list down to 1914. Beautiful English renderings of Gaelic poetry are published in *Selections from the Gaelic Bards*, T. P. Pattison, 1866, and in *Language and Literature of the Highlands*, J. S. Blackie, 1876. See Erse, *illus.*

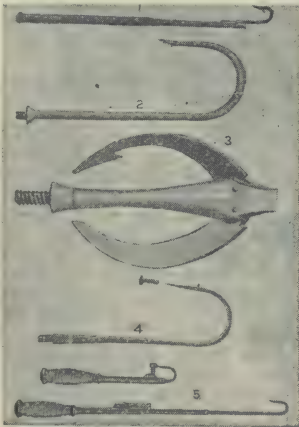
Gaeta (anc. *Portus Caieta*). Seaport and city of Italy, in the prov. of Caserta. It stands amid beautiful surroundings 30 m. N.W. of Capua, and 74 m. by rly. N.W. of Naples. A strongly fortified naval station, it has an Angevin castle, a 12th century cathedral with belfry, remains of an amphitheatre and theatre. The town is

the centre of considerable trade, coasting, and fishing. Near it was the Formian villa of Cicero, and tradition points to the spot where he was murdered.

On the fall of the Roman Empire Gaeta became an independent centre of culture and commerce. It held out against the Austrians in 1815 and 1821, and afforded an asylum to pope Pius IX in 1848-49. The last Bourbon king of Naples was besieged in the town and forced to surrender to Victor Emmanuel, Feb. 13, 1861. Pop. 5,344.

Gaff (Fr. *gaffe*). A spar which stretches out the upper end of a sail. The forked part of the gaff which fits upon the mast is called the jaws. At the back of the mast these jaws are joined by a parrel, a cord or rope with balls of wood upon it, so that the jaws slide up and down the mast easily. The other end of the gaff is termed the peak, and the sail is attached to it by ropes known as halyards. Sails with which a gaff is used are gaff sails. Gaff top sails are sails set above the mainsail.

Gaff. Stick armed with an iron hook for landing large fish, especially salmon. The use of the gaff is



Gaff. 1. With handle. 2. For trout. 3. Folding gaff. 4. With point-protector. 5. Telescopic gaff.

By courtesy of S. Allcock & Co.

prohibited in the Tweed after the close of the net fishing, and in the Helmsdale while kelts are in the water. See Bone Implements, illus.

Gage (Fr., pledge). Security given for the performance of an act, to be forfeited in the event of non-performance. Hence something, such as a gauntlet, flung down in token of challenge, the challenger pledging himself to fight the man who shall pick it up.

Gage, Viscount. Irish title borne since 1720 by the family of Gage. In the 15th century, or

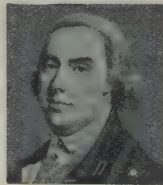
earlier, it was settled at Firle in Sussex, and its early members included Sir John Gage (c. 1479-



6th Viscount Gage
British soldier
Ruskin

Spain. At one time he had vast wealth in shares of the Mississippi Company, and offered large sums to become king of Poland and then of Sardinia. His elder brother, Thomas, who inherited the baronetcy dating from 1622, was made an Irish baron and viscount in 1720, and was a courtier in the time of George II. His younger son was the soldier, Thomas Gage (1721-87). The 2nd viscount was made a peer of the United Kingdom in 1780, with a remainder to his nephew Henry (d. 1808), ancestor of the 6th viscount (b. 1895), who succeeded to the title in 1912.

Gage, Thomas (1721-87). British soldier and administrator. Entering the army in 1741, he distinguished himself in Braddock's expedition against Fort Duquesne, 1755. In 1760 he became governor of Montreal, and in 1774 was appointed governor of Massachusetts. Here he lacked tact in dealing with the admittedly difficult situation which led to the collision between his troops and the colonists at Lexington on April 18, 1775. This was followed by the battle of Bunker's Hill on June 17, and though Gage was appointed commander of the forces in America in Aug., he shortly afterwards resigned and returned to England. He died April 2, 1787.



Thomas Gage,
British soldier.

Gagern, Heinrich Wilhelm August von (1799-1880). German statesman. The son of a diplomat, he was born at Baireuth, Aug. 20, 1799, studied law at Göttingen and Jena, and became prominent as a liberal in the chamber of Hesse. Elected president of the Frankfurt parliament in May, 1848, and chief of the imperial ministry from Dec., 1848, to May, 1849, he stood for a moderate liberal con-

stitution and a united imperial Germany. An opponent of Prussian policy, he fought for Slesvig-Holstein in 1850. He died at Darmstadt, May 22, 1880. He wrote a Life of his brother Frederick, a distinguished soldier.

Gahnite. One of the spinel group of minerals. An oxide of zinc and aluminium, it is dark green in colour. It is associated with franklinite (*q.v.*). See Spinel.

Gaiety Theatre. London theatre at the corner of the Strand and W. Aldwych. Built from de-



Gaiety Theatre, London. The main entrance of the new building

signs by Norman Shaw, it was opened by George Edwardes with *The Orchid*, Oct. 26, 1903. It is successor to an older Gaiety Theatre, an enlargement of the Strand Music Hall, opened Dec. 21, 1868, under the management of John Hollingshead with *On the Cards*, by F. C. Burnand, and Robert the Devil, a burlesque by W. S. Gilbert. In the 'eighties and 'nineties the old Gaiety was famous as the home of burlesque, with Nellie Farren, Edward Terry, and Fred Leslie as the most brilliant of its many stars.

Demolished to make room for the Strand improvements, its curtain rang down finally July 3, 1903, on *The Linkman*. Under George Edwardes's control the new Gaiety was devoted almost exclusively to musical comedy. The theatre was acquired in 1920 by Grossmith and Laurillard. The Gaiety at Manchester was run as a repertory theatre by Miss Horniman, 1908-20.

Gaillardia. Genus of annual and perennial herbs of the natural order Compositae. They are natives of America. The leaves are lance-shaped and rough, the flower-heads yellow or purple, and the ray florets broad, but cut at the end into three or five teeth. Several of the species are favourite garden flowers.

Gaine. French name for a component employed in high explosive shell. It has been adopted in English, where the term exploder container is also used to describe a similar fitting. High explosive shell must be filled with insensitive explosive to prevent premature detonations under the influence of the shock of discharge, and these must also be compressed to high density to eliminate the possibility of movement when the shell is fired. The increased density further reduces the sensitivity, and consequently a fulminate detonator is alone insufficient for the initiation of the charge, and the gaine is introduced to eliminate this defect.

In modern high explosive shell the gaine consists of a fairly stout steel tube, closed at one end, which is screwed into the nose or base of the shell so that it is embedded in the high explosive charge, whilst its open end is threaded to accommodate the fuse. The gaine is filled either with a more sensitive high explosive than the charge, or with the same explosive in a loose condition. Its great sensitivity and the confinement of the steel walls of the gaine enable it to be completely detonated by the fulminate in the fuse, and to communicate detonation to the main charge. *See Exploder; Explosives; Shell.*

Gainesville. City of Florida, U.S.A., the co. seat of Alachua co. A winter resort and busy rly. junction, it is 70 m. S.W. of Jacksonville, and is served by the Seaboard Air Line and other rlys. It is the seat of Florida State University, removed there from Lake City in 1905, and contains a public library. Fertilisers and lumber products are manufactured, and there are bottling works, wagon works, and foundries. Settled in 1850, Gainesville was incorporated in 1869, and received a city charter in 1907. Pop. 6,183.

Gainsborough. Urban dist., market town, and river port of Lincolnshire, England. It stands on the Trent, 18 m. N.W. of Lincoln by the G.C. and the G.N. and G.E. Jt. Rlys. The parish church of All Saints has a 12th century tower, and the Old Hall or manor-house is a picturesque 15th century building, restored in 1884.

Gainsborough is the St. Ogg's of George Eliot's Mill on the Floss. The industries include ship-building, ironfounding, and the manufacture of linseed oil, and a large inland trade is carried on by means of the canals connecting with the Trent. The council owns the gas and water supplies, and maintains



Gainsborough, Lincolnshire. The Old Hall, a baronial structure rebuilt 1480-1500

baths, library, recreation grounds, markets, and corn exchange. It gives its name to a co. div. returning one member to Parliament. Four fairs are held annually. Market day, Tues. Pop. 20,600.

Gainsborough, THOMAS (1727-88). English painter. Born at Sudbury, in Suffolk, and baptized in May, 1727, he was sent to London at the age of thirteen, and is believed to have studied at the Academy of Arts in St. Martin's Lane. In



1745 he married Margaret Burr, who possessed an annuity which enabled the young couple to settle in Ipswich.

In Ipswich he made the acquaintance of Thicknesse, the governor of Landguard Fort, who advised him to go to Bath to try his fortune. This Gainsborough did in Oct., 1759, and his portraits attracted considerable attention there. On the foundation of the Royal Academy he became one of its original members, and in 1774 left Bath for London to reside at Schomberg House in Pall Mall. There his reputation reached its height. His studio was crowded with sitters, and, although he raised his prices several times, he was unable to keep pace with the demands made upon him. He exhibited yearly at the Royal Academy until 1783, when he quarrelled with the council concerning the position allotted to his portrait group of the princess royal with the princesses Augusta and Elizabeth. After that he ceased to exhibit at the Academy. He died at Schomberg House, Aug. 2, 1788 and was buried in Kew churchyard. Sir Joshua Reynolds's 14th Discourse, delivered to the students of the Royal Academy, Dec. 10,

1788, was almost entirely concerned with his genius.

Of his wonderful paintings, more than 200 were portraits. He also practised the art of etching with some success, and produced a few plates in aquatint. Some of his finest pictures are in the National Gallery, Dulwich Gallery, Windsor Castle, Grosvenor

House, Buckingham Palace, National Gallery at Edinburgh, and the Wallace Collection, and many are in private American collections. A man who was much beloved, and an accomplished musician, Gainsborough stands in the front rank of English portrait and landscape painters. For exquisite beauty and vibrant quality, his portraits have never been surpassed. Their grace and dignity are unparalleled. *See Art; Charlotte; illus.*

G. C. Williamson
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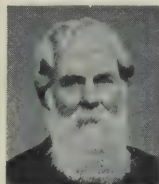
Gairdner. Salt-water lake of S. Australia. It lies 360 ft. above sea level, 90 m. S.W. of Lake



Thomas Gainsborough. His portrait of Master Buttol (c. 1770), commonly called the Blue Boy

Torrens. Its length from N. to S. is 100 m., and its maximum breadth 40 m.

Gairdner, JAMES (1828-1912). British historian. Born in Edinburgh, March 22, 1828, he entered



James Gairdner,
British historian
Russell

the Public Record Office in London in 1846, and spent nearly his whole life there. He was made a C.B. in 1900, and died Nov. 4, 1912. Gairdner's researches were mainly concerned with the early Tudor period. He edited the Letters and Papers of the Reign of Henry VIII, from vol. V onwards, 1880-1910; and The Paston Letters, 3 vols., 1872-75; while among his writings are Henry VIII, 1889; History of Richard III, 1898; The Early Tudors, 1902 (Cambridge Modern Hist. vol. 1); and Lollardy and the Reformation in England, 1908-11.

Gairloch. Sea loch of Scotland. On the W. coast of Ross and Cromarty, it is 6 m. long and $3\frac{1}{2}$ m. broad at the entrance. The name is also borne by a village at the head of the loch, which has a pier at which steamers call, and golf links. Pop. 3,300.

Gaiseric OR **GENSERIC** (c. 395-477). Vandal king. The son of a king, he himself became king on the death of his brother in 428, being doubtless chosen on account of his reputation as a fighter. His people were then in Spain, but he led many of them across to Africa and made his first conquests at the expense of the Romans there. The emperor Valentinian III recognized the new Vandal kingdom, of which Carthage was the capital. Gaiseric then began a career of conquest at sea, capturing Sicily, Sardinia, and Corsica, making his hordes feared by the dwellers along the Mediterranean coasts. His greatest exploit was the sack of Rome, 455. His power remained unshaken until his death, Jan. 25, 477. See Genseric, King of the Vandals and First Prussian Kaiser, P. Bigelow, 1918.

Gaisford, THOMAS (1779-1855). British scholar. Born Dec. 22, 1779, at Hord, Wiltshire, the son of John Gaisford, he was educated at a school near Winchester. In 1797 he entered Christ Church, Oxford, becoming tutor. He was then ordained. In 1812 he was chosen regius professor of Greek, and in 1831 became dean of Christ Church; a post he retained until his death, June 2, 1855. Gaisford made a

great reputation as a Greek scholar by his edition of many of the Greek writers. He did useful work in connexion with the Oxford University Press.

Gaiters (Fr. *guêtre*). Covering of cloth for the leg, buttoning from knee to ankle, and usually ex-



Gaiters. 1. Military, 2nd half of 18th century. 2. Bishop's. 3. As worn in Highland regiments. 4. Women's and men's, 1920

tending to the instep. Spatter-dashes, or "spats," both forms of gaiters, used to form part of a military costume, and still exist in that of Highland regiments.

Gaius (2nd century A.D.). Roman jurist. Except that he lived during the period from Hadrian to Marcus Aurelius, nothing is known of him, not even his full name. Fragments of his *Institutiones* were preserved in Justinian's Digest and other works, while in 1816 the historian Niebuhr discovered, in the library of the chapter house at Verona, a MS. of Jerome, written over an almost complete copy of the work. See Roman Law.

Gala Beds. In geology, a group of sedimentary rocks, shales, flagstones, grits, etc. Between 3,000 and 5,000 feet in thickness, they are developed in the S. of Scotland.

Galactorrhoea. Term applied to a disorder of lactation in which there is persistent excess in the amount of milk secreted, but the milk is thin and poor in quality. It is generally the result of debility in the mother, and usually renders weaning of the infant desirable.

Galago. Group of small, long-tailed, lemuroid animals, found in most parts of tropical Africa. The largest of them is about the size of a domestic cat, while the smallest is only five inches long. They are nocturnal in habit, and feed mainly on fruits, insects, and small birds. They are readily distinguished from the true lemurs by their very large ears.

Galahad. Knight of Arthur's Round Table, who achieved the vision of the Holy Grail. Son of Lancelot and Elaine, daughter of King Pelles, he was brought up by nuns, came to Camelot on the eve of Pentecost, and received knighthood at Arthur's hand. After riding on many strange adventures, he started, with Sir Percivale and Sir Bors, on the quest of the Sangreal, and was granted the sight of the mystic cup from which Christ drank at the Last Supper. Thereupon Galahad asked for death, and when, in due course, his hour came, the Sangreal was



Galahad, the knight of purity. From the picture by G. F. Watts, in the chapel of Eton College

borne up to heaven and never seen of man again. See Grail; Morte d' Arthur.

Galantine (Fr.). Dish of cold meat covered with jelly. The name is probably derived from late Lat. *galatina*, jelly, ultimately from Lat. *gelare*, to freeze.

Galápagos OR **TORTOISE ISLANDS.** Group of volcanic islands in the Pacific Ocean, 695 m. W. of Ecuador, to which they belong.



Galago. Specimen of the Maholi galago

Officially renamed the Colon Archipelago in 1892, the chief are Albemarle, Indefatigable, Chatham, James, Hood, Narborough, Barrington, Charles, and Abingdon. Albemarle, by far the largest, is 60 m. long. The total area of the archipelago is 2,400 sq. m.

Most of the surface, which rises from 3,000 ft. to 3,600 ft., is arid. Yet there is a richly endemic flora, and an interesting fauna; turtles of huge size and giant tortoises are found. Domestic animals run wild; cotton, figs and oranges, and tobacco plants, introduced by early colonists, are widely distributed. Sulphur exists in large quantities. On Charles Island there is a penal settlement. Pop. 400.

Galashiels. Mun. burgh and parish of Selkirkshire, Scotland. It stands on Gala Water, near its confluence with the Tweed, 33½ m. S. by E. of Edinburgh, on the N.B.R. The chief seat of the Scottish woollen industry, introduced towards the end of the

16th century, Galashiels has important tanneries, dyeworks, and hosiery manufactories. Near by are Abbotsford and Ashestiel, residences of Sir Walter Scott. Market day, Tues. Pop. 14,531.

Galatea. In Greek mythology, a sea nymph, one of the daughters of Nereus. She loved the beautiful Sicilian youth Acis (*q.v.*), who was slain by the jealous Cyclops Polyphemus. Galatea herself is the personification of the bright, calm sea. The name has also been given, in modern times, to a statue endowed with life by the goddess Venus at the prayer of the sculptor Pygmalion (*q.v.*). See Anderson, Mary, *illus.*

Galatea. Strong, coloured, cotton cloth. Used for children's suits or working dresses, the pattern is a plain or fancy stripe, and the weave a twilled one.

Galati or **GALATZ.** Town of Rumania, in Moldavia. It is situated on an amphitheatre of hills rising on the N. side of the Danube about 10 m. above its junction with the Pruth, and nearly 80 m. N.E. of Bukarest. Before the Great War it was a prosperous place, with a pop. of more than 70,000 in 1915, owing to the improvement of the navigation of the Danube by the Danube Commission. One of the best ports on the Danube, it manufactures iron and copper, and exports large quantities of grain and timber. It was the scene of a defeat of the Russians by the Turks in 1789, and was bombarded in 1916 by the Germans and Bulgarians.

Galatia. Territory in Asia Minor, comprising part of Phrygia and part of Cappadocia. It was so called from the name of its inhabitants, Galatae, who were Gauls belonging to the expedition which, under Brennus, penetrated into Greece in the third century B.C. These Galatian Gauls were an offshoot from the main host who crossed the Hellespont and overran Asia Minor, until checked by Attalus I, king of Pergamum (241-197 B.C.), who compelled them to settle within the limits of the country subsequently known as Galatia. The Galatians became Graecised in culture, but retained their Gallic speech. Under Augustus, Galatia became a Roman province.

Galatians, EPISTLE TO THE. One of the four principal Epistles written by S. Paul. Like the Epistle to the Romans, it contains the main points of the Apostle's teaching, together with autobiographical matter, which supplements the biographical statements in the Acts. The Epistle raises some difficult problems. The most difficult is the question of its destination. Galatia was used in ancient times to denote both a northern district of Asia Minor and also a southern district, the latter being the Roman province.

The N.T. does not mention any missionary work undertaken in the northern district. Hence some scholars adopt what is called the North Galatian theory, others what is known as the South Galatian theory. The latter has the support of Sir W. Ramsay, and it is more natural to suppose that the Epistle was addressed to the Church in South Galatia. If this theory is adopted, the Epistle may be supposed to have been written from the Syrian Antioch about A.D. 53. See Paul, Saint.

Galatina. Town of Italy, in the prov. of Lecce. It is 15 m. by rly. S. of Lecce. It has a fine 14th century church, with sculptures and tombs, besides frescoes by Francesco d'Arezzo. There is trade in oil, wine, leather, and cotton. Pop. 15,400.

Galatz. Alternative name of the Rumanian town known as Galati (*q.v.*).

Gala Water. River of Scotland. It rises among the Moorfoot Hills, and flows through the counties of Selkirkshire and Roxburghshire, until it falls into the Tweed, 1 m. below Galashiels. Length, 21m.

Galaxy (Gr. *galaxias*, milky). Greek name for the Milky Way, the great band or zone of stars, following a great circle of the heavens. See Milky Way.

Galba, SERVILIUS SULPICIOUS (3 B.C.-A.D. 69). Roman emperor. He had held several provincial governorships with credit, when, in June, 68, he was proclaimed emperor by the legions in Gaul, who had risen in revolt against Nero. He proceeded to Rome, but his reign lasted only till the following December, his harshness and parsimony making him exceedingly unpopular. As a result of a conspiracy he was murdered by the soldiery.



Galatea, the sea nymph, riding in her chariot of shell. From the painting by Raphael

Farnese Palace, Rome



Servilius Galba, Roman emperor

From a bust

Galbanum. Gum resin used in medicine for chronic catarrh and rheumatism. Its origin is uncertain, though a consensus of opinion gives it as a resin from an umbelliferous plant, *Ferula galbaniflua*, found in Persia. Galbanum occurs in the form of tears or large masses, yellow in colour, and possessing an odour of balsam with a bitter taste.

Galcha (Persian, boor). Name denoting several mountain tribes in the Pamir and Hindu Kush region in Afghanistan and Russian Turkistan. The best known are the Shighni and Wakhi near Badakshan. They represent the easternmost extension of the round-headed, long-bearded race occupying the alpine axis westward to the Pyrenees. Early Aryan admixture often reappears in tall, blond, red-haired, grey-eyed descendants. Living in patriarchal communities, with no intertribal cohesion, they speak non-Sanskrit dialects. See Iskasmii.

Galdós, BENTO PÉREZ (1845-1920). Spanish novelist and dramatist. Born at Las Palmas, Canary



B. Pérez Galdós,
Spanish novelist

Islands, he studied law at Madrid, but turned to literature. In 1871 he published *La Fontana de Oro*, and in 1879 appeared the first series of *Episodios Nacionales* (National Episodes), which was to extend to 50 vols. and present in fiction form the history of 19th century Spain.

He wrote also a large number of novels, notably the popular *Doña Perfecta*, 1876 (Eng. trans. 1880), and novels of contemporary life, including *Nazarín*, 1895, his greatest individual work. There are English translations of *Gloria*, 1879; *Trafalgar*, 1884; and *Marianela*, 1893. Of his dramas, *Electra*, 1901, is the best known. Galdós sat as a deputy in the Cortes, 1885, and died at Madrid, Jan. 4, 1920.

Gale, NORMAN ROWLAND (b. 1862). British poet. Born at Kew, he published his earliest poems about 1883, and was soon noted for his dainty lyrics of birds and flowers, his spirited cricketing songs, and his charming verses addressed to children. His volumes of poems include *A Country*



Norman R. Gale,
British poet

Muse, 1892; *Orchard Songs*, 1893; *Cricket Songs*, 1894; *Songs for Little People*, 1896; *More Cricket Songs*, 1905; *A Book of Quatrains*, 1909; *Merry-go-Round of Song*, 1919. He also wrote some stories, including *A June Romance*, 1894.

Galen OR **CLAUDIUS GALENUS** (c. A.D. 130-200). Greek physician and writer on medical philosophy.



Claudius Galen,
Greek physician
From a bust in the Coll.
of Physicians, London

Born at Pergamum, Asia Minor, he studied at the chief seminaries of Greece and Egypt, and about 164 went to Rome, where he became famous by his wonderful cures, many of which were popularly attributed to magic. He was intimate with Marcus Aurelius, and body physician to his son Commodus during the emperor's absence on the Danubian campaign. Later he returned to Pergamum.

Galen was the author of some 500 treatises on medical and philosophical subjects. Most of these were burnt in the Temple of Peace in Rome, where they had been deposited, but 83 authentic works are extant, besides some commentaries on Hippocrates and some works of doubtful authenticity. The date and place of his death are uncertain, some authorities saying it took place in Sicily about 200, others at Pergamum some years later. As a physician Galen ranks second only to Hippocrates; he was great as a practical anatomist, but as a physiologist erred on the side of theory. He coordinated all the medical knowledge of his predecessors and contemporaries, and did more than any other single man to render possible the development of modern medicine. See *Harvey* and *Galen*, J. Payne, 1897.

Galena OR **LEAD GLANCE**. The most important ore of lead and the source of most of the lead of the world. Widely distributed throughout the world in granite, limestone, argillaceous, and sandstone rocks, it is often associated with ores of zinc, silver, and copper. When pure it contains 86.55 p.c. of lead and 13.45 of sulphur, and is a sulphide of lead. Galena usually contains silver, sometimes in such proportions that it is rather an ore of silver than of lead. See *Lead*; *Silver*.

Galeopithecus. Generic name for the flying lemurs (*q.v.*). Natives of Malaya and the Philippines, they eat leaves and fruit. See *Colugo*.

Galerites (Lat. *galérus*, a cap). Sea urchins of the Cretaceous system, with conical shaped shells, which give them the popular name of sugar-loaves. The under surface is flat, with a central mouth.

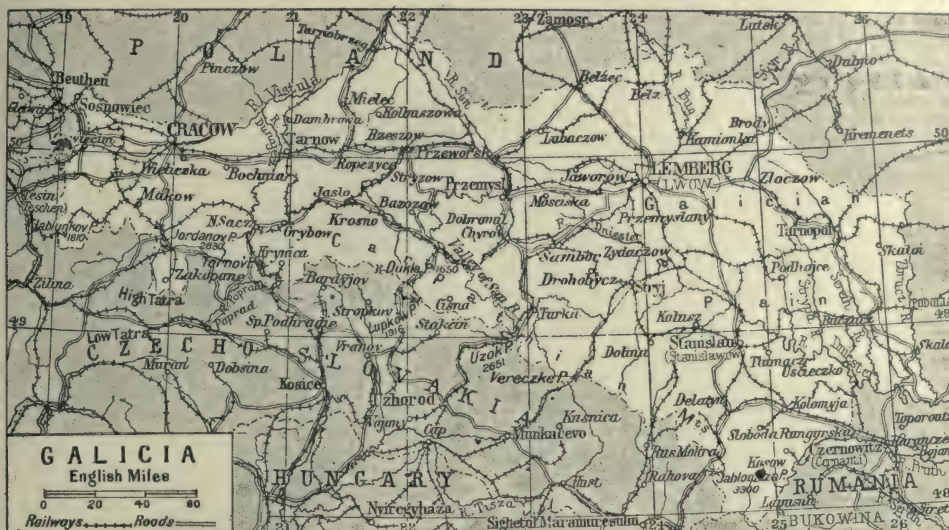
Galerius VALERIUS MAXIMIANUS (d. 311). Roman emperor A.D. 305-311, also known as Maximianus II. At the quadripartite division of the empire by Diocletian in 293, Galerius became one of the Caesars or junior rulers, with control of the Danube provinces and the Balkans from Sirmium, and on the abdication of Diocletian in 305 he became senior emperor.

Galesburg. City of Illinois, U.S.A., the co. seat of Knox co. It is 43 m. E.N.E. of Burlington, and is served by the Chicago, Burlington and Quincy, and the Atchison, Topeka and Santa Fé rlys. An educational centre, it contains Knox, Lombard, and Corpus Christi colleges, extensive rly. workshops and stockyards, and brickmaking, ironfounding, and the manufacture of boilers, engines, and agricultural implements are carried on. Galesburg was settled in 1837, and chartered as a city in 1857. Pop. 24,629.

Galgacus OR **CALGACUS**. Caledonian chief. He commanded the northern native tribes when Caledonia was invaded by Agricola (*q.v.*), and after a determined resistance was defeated about A.D. 85 at the battle of Mons Graupius, the modern Grampians (*q.v.*). The site of the battle is variously placed. Tacitus put into the mouth of Galgacus the well-known words "they make a solitude and call it peace."

Galicia. Former kingdom and prov. of N.W. Spain, now divided into the provs. of Corunna, Lugo, Pontevedra, and Orense. It lies between the Bay of Biscay, the Atlantic, and Portugal, with deeply indented coast-line, and is traversed by mts. and watered by the Minho and many smaller streams. The Galician people (Gallegos), a rude, industrious race, retain their individuality. The coastal climate is mild and equable, the rainfall abundant, and the soil is productive. A Roman colony, a Suevian kingdom, a Moorish possession, a part of Castile or Leon, Galicia has shared fully in the history of the peninsula. Its area was nearly 16,000 sq. m.

Galicia. Formerly the largest prov. of Austria, but since the Great War mostly within the republic of Poland. Galicia extends for rather more than 300 m. along the N. side of the Carpathian Mts., from the common frontier of Poland and Czecho-Slovakia in the



Galicia: Map of the Polish district, part of the Austrian Empire 1772-1918, and the scene of important fighting during the early part of the Great War

neighbourhood of Tšin (Teschen) to the frontier of Rumania between the Dniester and the Carpathians. The N. boundary of the district begins in the W. on the N. side of the Vistula, then follows the river itself for over 100 m., passes up the valley of the San to the E. of that stream, crosses the Bug to Brody, and finally follows the Zbrucz affluent to the Dniester.

The S. half of Galicia comprises the foothills of the Carpathians, mainly composed of flysch sandstones. The heights stretch in long, monotonous ridges from E. to W., except where the granitic Tatra Mts. present rugged Alpine peaks. The whole area is a natural forest region, coniferous trees being common on the higher ground. The deeply out valleys contain fertile alluvium. The Jablunkov (1,810 ft.), Lupkov (1,916 ft.), Dukla (1,650 ft.), and Uzok (2,651 ft.) are the chief passes from Poland to Czecho-Slovakia. The Magyar or Tatar Gate (3,300 ft.), also known as the Delatyn or Jablonica pass in the Forest Carpathians, is strategically the gateway from Russia to the Hungarian plain.

The foothills contain deposits of salt and petroleum. The great salt mines of Wieliczka, near Cracow, have been worked for centuries, and the galleries extend for 3 m., 1,000 ft. below ground. Rich deposits of salt are also worked at Bochnia, Sambor, Drohobycz, and Dolina. Drohobycz is the chief centre of the oil district.

The N. portion of Galicia com-

prises three lowland areas: in the W. the narrow valley of the Vistula; in the middle the Galician plain between the Vistula and its affluent the San; in the E. the lowland between Podolia and the Carpathians. The Galician plain is trenched by broad alluvium-filled valleys made during the Ice Age in which the modern rivers, all too small for the valleys, flow unconformably. Between the valleys the plateaux rise from 50 ft. to 150 ft. above valley level; they are covered with glacial deposits of sand and clay, with many erratic boulders. The forest covering has been cut down; sand has encroached over the area and destroyed its former fertility. In the N. there are sand dunes. The rivers flood regularly, and prevent the fertile valley alluvium from being well tilled.

The E. lowland is divided into two parts by the water parting, which passes from W. to E. close to Lemberg (Lwów), between the Baltic and the Black Sea drainage. Northwards drains the Bug, one of the chief tributaries of the Vistula, southwards the Dniester and its main affluent, the Sereth, and the Pruth drain to the Black Sea. The N. portion is level and monotonous, with pinewoods, peat bogs, and sand dunes. In the S. portion the rivers have cut deep trenches filled with alluvium; the spring floods frequently turn the valleys into temporary lakes.

Galicia is more densely peopled than the rest of Poland to the N.,

or the former Hungarian area to the S. The inhabitants in the W. are Roman Catholic Poles, and in the E. Greek Orthodox Ruthenes or Little Russians. In the towns there are many Jews. The boundary zone between Poles and Ruthenes is approximately the valley of the San, although the districts round Lemberg and Tarnopol in the E. contain more Poles than Ruthenes. Historically, this boundary zone has marked the E. limit of the influence of the Roman Church since A.D. 1000. It contained the S. portion of the E. boundary of the kingdom of Poland in A.D. 1200, although the whole of Galicia was included within the kingdom of Poland during the 14th, 15th, and 16th centuries. In 1740 Galicia, still wholly in Poland, was divided, the W. belonging to the district of Little Poland and the E. to Red Russia. Galicia became Austrian in 1772. That part W. of the San went to Poland after the Great War, and East Galicia to Poland in 1923.

Galicia, BATTLES IN. Towards the end of 1915 the Russians under Ivanoff undertook an offensive, the immediate objective of which was Czernowitz, but which extended N. over the earlier battlefields of the Strypa and the Styry. This offensive had in view possible Austro-German action against Rumania, and covered a Russian offensive in the Caucasus.

In S.E. Galicia the Russian line lay a short distance within the

Austrian frontier, and fighting began N.E. of Czernowitz.

Meanwhile a considerable battle was being fought in the region of the Styra, where Brusiloff was in command, his purpose being to hold the enemy and prevent him from sending reinforcements to the S. On Dec. 29 a fierce struggle developed near Chartoryisk, and on Jan. 1, 1916, the Russians forced a passage across the river. On Jan. 7 Brusiloff captured Chartoryisk, and next day successfully dealt with a strong counter-attack.

After sanguinary encounters in this area there came a lull, followed on Feb. 9 by the brilliant capture

tinuance in 1904, was called The Daily Messenger.

Galilee. Prov. of N. Palestine. Little is recorded of it in O.T. days, but after the Captivity it was ceded by the Assyrians to the Israelites and soon became virtually a separate nation, the inhabitants being chiefly Arabs, Syrians, and Greeks. They



Galilee, looking across the sea towards Tiberias



Galilee. Map of the province in New Testament times

by the Russians of the Usciecko bridgehead on the Dniester. Thereafter trench warfare supervened, with little change in the respective fronts until the great offensive of the Russians under Brusiloff which began in June. See Lutsk, Battles of.

Galignani, GIOVANNI ANTONIO (1752–1821). Founder of a celebrated family of European publishers. Born in Brescia, he settled in Paris and established an English library there in 1800. In 1814 he began the publication of Galignani's Messenger, carried on by his descendants until 1884, when they disposed of the paper which thenceforward, until its discon-

and Capernaum, the latter the scene of so much of Christ's ministry that it was known as His own city. Of these cities only Tiberias remains, the sites of the others having been covered up.

Galilee. Term in ecclesiastical architecture. Its origin is obscure. It is applied to a chapel at the west end of Durham Cathedral, and also

were despised by the Jews of the S., and the fact that Christ's country was in that country was made a reproach to Him. Tiberias was its chief city, and it was a fertile and populous district, but is now little better than a wilderness in many parts.

Galilee, SEA OF. Lake in Palestine, also called the lake of Tiberias and the lake of Gennesareth. It is formed by an expansion of the Jordan, about 13 m. long by 8 m. broad. Owing to its situation among steep hills it is subject to sudden and violent storms, to which allusion is made in the Gospels. On its shores stood various cities, including Tiberias

to large porches such as those to be seen at Ely Cathedral and Lincoln Cathedral. See Ely.

Galilei, GALILEO (1564–1642). Italian astronomer. Born at Pisa, Feb. 15, 1564, he was the son of a Florentine nobleman, who intended him to adopt medicine as a profession. He entered Pisa University in 1581, but there he soon followed his natural inclinations, and while still only 25 he became professor of mathematics and dynamics from 1589–91.

Early distinguished by clarity and originality of thought, his free expressions of opinion won him such unpopularity that he had to resign. In 1592 he went as professor of mathematics to Padua, where he made a series of scientific discoveries. A report from Flanders in 1609 of the invention, by Hans Lippersheym, of a glass which made remote objects appear near, led to his constructing a telescope, and its first application to astronomical observation.



Galileo Galilei
From a picture in Trin. Coll., Camb.



Galilee chapel in Durham Cathedral looking south-east

This marked a revolution in astronomy, and Galileo's first observations were published in *Sidereus nuncius*, 1610. Specially notable was his discovery of the satellites of Jupiter, confirming the planetary theory of Copernicus (*q.v.*). In that year Galileo moved to Florence, as mathematician to the duke of Tuscany, and observed sun-spots and the formation of Saturn. During 1613-15 he was engaged in controversy on the theological implications of his discoveries, and of the Copernican theory, which resulted in his being warned by the Holy Office, in Feb., 1616, not to preach the latter doctrine.

In 1632 appeared his great work, *The Dialogue of Two Systems of the World*, and the controversy reopened. Summoned to Rome, he was obliged to recant the doctrine that the earth moved round the sun. He returned to Florence, where he spent his remaining years. Becoming blind in 1637, he died on Jan. 8, 1642.

Bibliography. Works, ed. E. Alberi, 16 vols., 1842-56; ed. A. Favaro, 20 vols., 1890-1909, etc.; Galileo and his Judges, F. R. W. Prosser, 1889; Galileo: his Life and Work, J. J. Fahie, 1903; Galileo (in *Pioneers of Progress Series*), W. W. Bryant, 1918.

Galitzin. Name of a Russian noble family. Vasilii Galitzin was its first prominent member, and after him came two brothers, Mikhail and Dmitri. Mikhail (1674-1730) was a soldier who assisted Peter the Great in his wars with Sweden; Dmitri (d. 1738) was one of those who helped Anne to secure the throne in 1730; in 1731, however, he was banished, and he died in prison. Later members included Dmitri Alexievitch (1738-1803), ambassador to France and to the Netherlands. He was also a writer on scientific subjects, the husband of Princess Galitzin, and the correspondent of Voltaire.

Galitzin, ADELHEID AMALIE, PRINCESS (1748-1806). German pietist. The daughter of a Prussian general, she was born at Berlin, Aug. 28, 1748, and married Dmitri Galitzin, Russian ambassador to Holland and France. Of literary tastes and an extraordinarily amiable disposition, she became noted for her piety. She established a circle of pietists in Münster. She died Aug. 24, 1806.

Galitzin, VASILII VASILIEVITCH (1643-1713). Russian statesman. In 1676 he was successful in a campaign against the Dnieper Cossacks and in 1682 became minister of foreign affairs. Regent during the minority of Peter the Great, he wielded great influence and ruled

Russia with a firm but just hand. He led two expeditions into the Crimea. In 1689 the regency ended, and Galitzin was sent into exile, dying in Siberia, March 13, 1713.

Galitzin, NICHOLAS DMITRIEVITCH, PRINCE (b. 1850). Russian statesman. The son of Prince Dmitri Borisovitch, he was born in March, 1850. Educated at the Lycée Alexander, he spent two years at the ministry of the interior. He was transferred in 1879 to Archangel as vice-governor, and in 1887, after acting for a brief period as director of the economic department in the ministry of the interior and for two years as governor of Archangel, he was promoted full governor. In 1893 he was governor of Kaluga, and in 1897 was transferred in a similar capacity to Tver. He later became a senator and member of the council of the empire, and was appointed prime minister in Jan., 1917, in succession to Treppoff.

Galium. Genus of hardy annual and perennial plants belonging to the order Rubiaceae. Its common name is bedstraw (*q.v.*).

Gall. Word used in different senses according to its etymology. (1) The fluid secreted from the liver, more generally known as bile (Gr. *cholē*, Lat. *fel*). The phrase gall and wormwood is used to express anything specially painful or unpleasant. (2) The gall-nut or oak-apple (Lat. *galla*), a swelling on the oak-tree resulting from the attacks of certain parasitic insects. From this probably comes the meaning of a soft tumour or sore on a horse's back, the result of rubbing, the verb to gall being used in the sense of to chafe.

The galls which are on trees and herbs are varied in their nature and origin, the majority owing their existence to newly-formed growths caused by the punctures of insects (gall-flies, beetles, etc.) to accommodate their eggs, this act causing an abnormal development of cell-tissue round the egg upon which the insect grub feeds. Of this class are the familiar oak-apples, bullet-galls, and leaf-spangles of the oak, the nail-galls of the beech and lime, and the cone-like galls on the shoots of spruce. Other galls, such as the "Witches-broom" which appears on pine trees, are caused by fungi. See Gall-fly.

Gall (c. 550-645). Irish saint. Born in Ireland, he was educated at Bangor under S. Columban. In 585 he went to France, and later to the neighbourhood of Lake Constance, where his preaching converted large numbers to Christianity. In 614 he founded the monastery of S. Gall, on the river Steinaob,

which became a great centre of learning. Offered the bishopric of Constance, 616, he declined. He died at Arbon, Oct. 16, 645.

Gall, FRANZ JOSEF (1758-1828). German anatomist and founder of phrenology. Born at Tiefenbrunn,



Franz Josef Gall,
German anatomist

near Baden, March 9, 1758, hestudied medicine at Strasbourg and Vienna. Interested by the possibility of a connexion between the form of the skull and mental growth and characteristics, he gave lectures on this subject in Vienna in 1796. In 1800 Joseph Caspar Spurzheim (1776-1832) became his pupil, and in 1804 his partner in research. They toured Germany and Switzerland lecturing, and came to Paris in 1807. In March, 1808, they laid before a committee of the Institute a statement of their theories, which was unfavourably reported upon. After Spurzheim left France in 1813, Gall continued to work in Paris till his death at Montrouge, Aug. 22, 1828. Among his works are *Anatomie et Physiologie du Système Nerveux*, 1810-19; *Introduction au Cours de Physiologie du Cerveau*, 1808.

Galla. People of Hamitic stock W. of Somaliland, in S. Abyssinia and the colony of Kenya (barbarians). First of the Hamites to occupy the eastern horn of Africa, they were driven inland by the allied Somali, and their original nomadism is now tempered by settled agriculture. Numbering 3,500,000, they breed horses in the Christianised north, cattle in the Moslemised south. Mingled with Nilotic negroes, they gave rise to the Masai; E. of the great lakes they became the Bahima herdsmen of Uganda and the Unyoro aristocracy. A negroid strain is perceptible in skin-colour and hair, in culture and belief. See Abyssinia; Africa, illus.

Gallabat. Town of the Anglo-Egyptian Sudan. It stands on a tributary of the Atbara, near the Abyssinian frontier. There is considerable trade with Abyssinia, Gallabat forming one of the frontier customs posts.

Galla Ox OR SANGA. Domesticated breed of humped cattle, found only in Abyssinia and the surrounding country. It is remarkable for its very massive horns, and it has been suggested that it is a descendant of the Indian buffalo.

Gallarate. Town of Italy, in the prov. of Milan. It is 25 m. by rly. N.W. of Milan, and a junction for Laveno, Arona, and Varese. It has an 11th century Romanesque church, a technical school, cotton mills, and many textile factories. Machinery, buttons, and cabinet goods are made. At Vizola, 6 m. to the W., are electric works, reputed to be the largest in the world. Pop. 15,868.

Gallas OR **GALAS**, **MATTHIAS** (1584-1647). Austrian soldier.

He began his military career in the Spanish service. When the Thirty Years War began he entered the service of the Catholic League, and his courage and talent soon carried him to the front.



Matthias Gallas,
Austrian soldier
From a print

One of Wallenstein's chief lieutenants, he took command of that general's army when its leader was murdered, a crime in which he was concerned. He won a great victory at Nordlingen over the Swedes in Aug., 1634, and remained a leading soldier, but not always a victorious one, almost until the end of the struggle. He was dismissed, but was recalled, only, however, to have his army destroyed, and his final appearances in the field were also failures. Gallas, who became very rich by his plunderings, founded the Austrian family of Clam-Gallas. His titles included those of count of the empire and duke of Lucera. His corpulence made him much ridiculed by his enemies. See Caricature, illus.

Gallatin OR **GALLANTIN**, **ALBERT** (1761-1849). Swiss-American statesman. Born at Geneva, Jan. 29,



Albert Gallatin
After Chappell

1761, he emigrated to America in 1780. For a time he was not very successful, either as a trader or a teacher, but fortune veered round, and in 1789 he was able to take part in the political life of Pennsylvania. He was a leader of the so-called Whisky insurrection, and a member of the state assembly for some years. In 1793 Gallatin was elected to the Senate of the U.S.A., but he was declared ineligible on a question of citizenship. This

difficulty removed, he took his seat in 1795.

Soon prominent among the opponents of the Federalists who controlled the Government, he won fame as an authority on financial matters. This led in 1801 to his appointment as secretary to the treasury, in which capacity he reduced the national debt, and did much to improve the country's financial position. Leaving the treasury in 1813, he was a commissioner for the treaty of Ghent, 1814. He was minister to France 1816-23, and to Great Britain 1826-7. He retired from public life in 1828. He died at Astoria, Long Island, Aug. 12, 1849. See Life, H. Adams, 1879; J. A. Stevens, 1890.

Gall-bladder.

Receptacle on the under surface of the liver. In it bile is stored to be discharged into the intestine during the process of digestion. See Gall-stones.

Galle OR **POINT**

DE GALLE. Seaport of Ceylon, on the S.W. coast of the island. Until the development of the harbour at Colombo, Galle was a port of considerable importance. Its harbour has the advantage of deep water close to the land, but it lacks adequate shelter to make it safe in rough weather. It was founded as Punto

Galleon (Span. *galeón*). Spanish ship of the 15th, 16th, and 17th centuries. Of large size, sometimes with three or four gun decks, it was used both for war and in the Indies trade. Owing to their cumbersome build, galleons were awkward to handle, and the lighter, quicker craft of the British seamen were able to defeat them by their better manoeuvring powers, as was shown by the defeat of the Great Armada. The name is sometimes used loosely of any large ship. A galleass was a ship of the galleon type but smaller, and partly propelled by oars. It had high castles at stem and stern and was low in the waist, where sat the 300 galley slaves who rowed the vessel.



Galleon of War such as formed part of the Spanish Armada

From an old print

Gallery (Fr. *galerie*). Upper floor extending over a part only of the room below it. In secular architecture, the use of a gallery may be traced, in Great Britain, to the Norman keep (*q.v.*), the hall of

which was often surrounded by a gallery built into the thickness of the wall. Such galleries were lighted by an upper tier of windows. As a domestic feature the gallery did not attain importance



Gallo by the Portuguese in 1518. Pop. (1911) 39,960.

Galle, **JOHANN GOTTFRIED** (1812-1910). German astronomer. Born in Pabsthaus, near Wittenberg, he was appointed in 1835 to the Berlin observatory, and in 1851 professor of astronomy and director of the Breslau observatory, retiring in 1897. He discovered three comets, and was the first to detect Neptune from Le Verrier's directions. See Neptune.



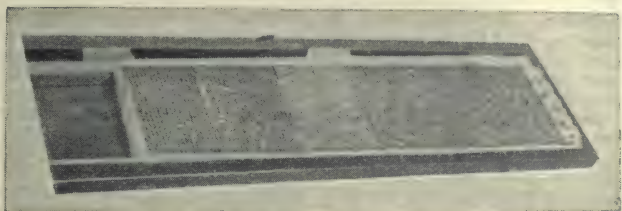
Gallery of the banquet hall in Haddon Hall, Derbyshire. Above, the Long Gallery, Hatfield House.

till the latter part of the 16th century, when the Elizabethan Long Gallery was introduced. The earliest example is believed to have been that at Hampton Court, built about 1540. From this time designers appear to have aimed at elongating this apartment as much as possible.

When it became the fashion to collect family portraits and other works of art, the gallery was the most suitable place for their accommodation; hence the application of the term to a museum of art treasures. The Elizabethan gallery extended the whole length of the longest wing of the house, and being on the first floor was approached from the hall by the main staircase. It was lighted from the sides as well as the ends, the walls were usually panelled, and the plaster ceiling richly decorated.

The minstrels' gallery (*q.v.*), a well-known feature of the hall of the fortified manor house, arose out of the custom of cutting off the entrance end of the hall from the rest by a screen, the roof of which formed a platform where music could be performed. Church interiors, in the Middle Ages, were often fitted with galleries, the top of the rood screen being frequently used for that purpose. Galleries at the west end and along the aisles of early 17th century churches were common until Archbishop Laud was charged with the duty of abolishing them. The word is also used for a level or drive in a mine.

Galley (late Lat. *galea*). Six-oared boat in the ship, used by the captain only. It is the largest



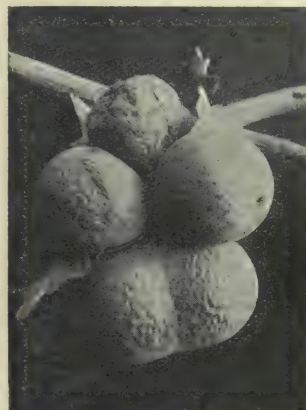
Galley of type as set up before making up into pages

Galley. In printing, a flat tray made of metal or wood used for holding type after it has been set. It is oblong or quarto in size with flanges on each side and at one end. On the quarto galley the type is made up into page form and secured before it is slid off on to the stone. Impressions of the type secured on the oblong galley by means of side-stick and quoins, are called galley proofs, and the form of press on which the proofs are pulled is known as a galley press. The term galley has been used also to indicate a quantity of type set in newspaper offices according to a prearranged scale. See *Printing*; *Type-setting*.

Gall Fly. Group of hymenopterous (membrane-winged) insects, nearly related to the wasps, and more correctly called gallwasps. They are all of very small size, either black or brown in colour, and in the majority of cases the insect in its larval stage is parasitic on plants. The galls found on the stems and leaves of many trees are often caused by the attacks of these insects; though certain beetles, flies, and aphids also cause them.

The female gall fly pierces the outer skin of the leaf or stem with her ovipositor, and leaves an egg in the wound. The presence of this egg, or of some fluid accompanying it, causes the plant to develop an abnormal growth of tissue around it, which soon assumes the appearance of the familiar gall. In this the larva lives and feeds, only emerging as it reaches maturity. Each species of gall fly affects one particular plant and keeps to it, and the resulting galls

which is hard and spherical; but there are many other and diverse forms found on the oak, including the oak apple. In the wild rose, the gall takes the form of a mossy outgrowth, known as a bedeguar, which usually contains several larvae. Many of the gall flies exhibit the phenomenon of alterna-



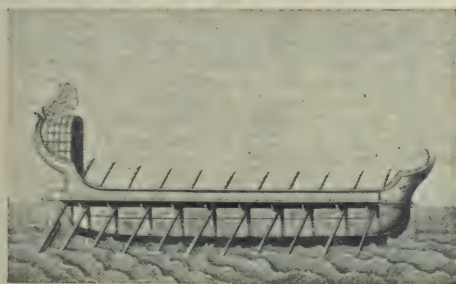
Gall Fly. Formation on oak-tree by *Cynips Kollari*

tive generation, sexual propagation and parthenogenesis taking place in turn.

Gallia. French fleet auxiliary. Completed in 1913, of 14,966 tons, she was torpedoed in the Mediterranean, Oct. 4, 1916, whilst carrying troops. More than 1,000 lives were lost.

Galliard. Old dance, of a lively character, in triple time. Some writers have quoted it as being of an immodest character, but there is nothing in the music to suggest this. One of the supposed original forms of God Save the King is a galliard by John Bull (1562-1628), of which the melody begins as shown below.

The galliard was usually associated with the pavan, a stately dance



Galley. Reconstruction of a single-tiered Liburnian galley, founded on the sculptures on Trajan's Column

single-banked (*i.e.* not having two oars abreast) boat in the ship. An admiral's boat is called a barge. Large galleys were the earliest form of fighting ship and were so used in the Mediterranean until late in the 16th century. The last great battle between galleys was that of Lepanto. In modern vessels the place where cooking is done is called the galley. See *Boat*.

are characteristic of both plant and insect. One of the most familiar is the oak marble gall,



Galliard. Opening of melody by John Bull

in duple time, which it followed in the suites of the 17th century. After about 1640 the galliard,

in name, disappeared, and its place was filled by the minuet and sarabande, as representatives of triple time. *See* Minuet; Pavane; Sarabande; Suite.

Gallic Acid ($\text{H}_3\text{C}_7\text{H}_5\text{O}_5 \cdot \text{H}_2\text{O}$). Substance with an astringent taste. It occurs naturally in small quantities in galls, sumach, and divi divi. It is best prepared by Scheele's method; finely powdered gall-nuts are extracted with cold water and the separated solution is allowed to become mouldy. The fermentation thus set up converts, or hydrolyses, the tannin into gallic acid. It is also prepared by boiling tannin with dilute sulphuric acid. Gallic acid is used in medicine as an astringent, and in photography on account of its power of reducing gold and silver salts.

Gallican Church (Lat. *Gallia*, Gaul). National church of France. It arose under Irenaeus towards the close of the 3rd century, took definite shape as a state organization under Charlemagne, and was consolidated by decrees of Louis IX in 1226-70, the controversies between Philippe IV and Boniface VIII, and Louis XIV and Innocent XI, and the councils of Pisa, Constance, and Basel. At the instance of Louis XIV its principles were drawn up by Bossuet in a document which maintained that S. Peter's successors had power alone in spiritual things and that papal decisions were valid only with the consent of the whole Church.

This attitude of independence of Rome became known as Gallicanism and had its advocates in other countries. It was opposed by Ultramontanism, or defence of Roman centralization; but the Vatican has always regarded it as representing a contest between despotic rulers and corrupt ecclesiastics for church property, patronage, and influence, and by the definition of papal infallibility it became a formal heresy.

The Gallican church was abolished at the Revolution of 1789, re-established under Napoleon, and finally severed from the state during the Third Republic. Its specific Gallicanism had become obsolescent before it ceased to be a national church. *See* Bossuet; Concordat; Fénelon; France; Jansenism; Jesuits; Lamennais; Ultramontane; consult also The Gallican Church in the Revolution, W. H. Jervis, 1882; Church and State in France, A. H. Galton, 1907.

Galliéni, JOSEPH SIMON (1849-1916). French soldier. Born at S. Béat, Haute Garonne, April 24, 1849, he entered the French army in 1870 as lieutenant of marines, taking part in the Franco-Prussian

War, and later seeing active service in the Sudan and Indo-China. He was governor of Madagascar from 1896-1905, organized the island as a French colony, and published an account of this work in *Neuf ans à Madagascar*, 1908. In 1908 he became a member of the Conseil Supérieur de Guerre. During the Great War he was appointed military governor of Paris, Aug. 26, 1914, saw to its fortifications, and rendered



Joseph S. Galliéni,
French soldier

substantial assistance to the French Sixth Army under General Manoury. He was named the "Saviour of Paris," as his plans helped to decide the victory of the Marne, Sept., 1914. In Oct., 1915, he was minister of war in the cabinet of M. Briand, but compelled to resign by ill-health in March, 1916, he died on May 27. He was posthumously created a marshal of France in 1921.

Gallienus, PUBLIUS LICINIUS EGNATIUS. Roman emperor A.D. 260-268. He was associated with his father, Valerian, in the government from 253 onwards, and succeeded him on his disappearance in the disastrous Persian campaign. Vain and frivolous, Gallienus was quite unfitted to rule in these difficult times. During his reign the separate "Empire of the Gauls" was created under Postumus, and the prince of Palmyra, followed by his more famous wife Zenobia, formed what was, in effect, an independent kingdom carved out of the eastern portion of the empire. Hordes of Goths penetrated the N.E. frontier, while plague materially reduced the population of the empire. Usurpers arose in all parts, and while dealing with one of these, named Aureolus, Gallienus was murdered by his own soldiery.



Galliot, a Dutch sailing vessel

Gallifet, GASTON ALEXANDRE AUGUSTE, MARQUIS DE (1830-1909). French soldier and politician. Born



Gaston Gallifet,
French soldier

Jan. 21, 1830, he entered the army in 1848, and saw service in the Crimea, 1854-55; in the Italian War, 1859; in Mexico, 1863; in Algeria, 1864-67; and in the Franco-Prussian War, 1870, when he was taken prisoner at Sedan. After his release, he was set to crush the Communards after the siege of Paris, and, performing his unpleasant duty with great severity, was attacked by his political enemies for the rest of his life. After another period in Algeria, 1872-73, he saw no more active service. In 1899 he was made war minister in Waldeck-Rousseau's cabinet, and died July 8, 1909.

Gallinaceous Birds (Lat. *gallus*, a cock). Name applied to game birds generally. It includes such groups as the pheasants, partridges, quails, and domestic fowls. They are found in practically all parts of the world, and are valued for the table. *See* Fowl; Grouse; Pheasant; Poultry.

Gallio. Proconsul of Achaia in the middle of the 1st century A.D. He was a brother of the Stoic philosopher, Seneca. Paul was brought before him at Corinth. Amiable, accomplished, and of mild disposition, he typified Roman impartiality towards the controversies of the sects and parties around him. The phrase "he cared for none of these things" (Acts xviii, 17) seems to imply this impartiality rather than to indicate either hostility or indifference to Paul. It is commonly applied to anyone who stands aloof from controversy.

Galliot (late Lat. *galeota*, small galley). Type of Dutch trader somewhat akin to the British

barge, and now almost obsolete. The galliot is a long, narrow, two-masted craft of about 100 tons burden. She carries a main mast and a mizzen, but the sail on the latter is of small area and used principally to assist in steering the vessel. The mainsail is short at the head and very long at the foot, or bottom.

Gallipoli. Seaport of Greece, formerly belonging to Turkey. Situated at the N.E. end of the Dardanelles, on the peninsula of the same name, it is 130 m. S.W. of Constantinople. It was the ancient Kallipolis, of which some ruins remain. Before the Great War it had a considerable trade in wheat, barley, maize, and linseed, produced in the neighbourhood. Its capture by the Turks in 1354 gave them their first foothold in Europe. There are two good harbours, of which the Allies made full use during the Crimean War. Pop. 25,000.

Gallipoli (Gr. *Kallipolis*, beautiful city). Seaport and city of Italy, in the prov. of Lecce. It stands on the Gulf of Taranto, on an island, protected by a fort and connected by a bridge with the mainland, 23 m. W. of Otranto. It possesses an Angevin castle, and a cathedral dating from 1629. Formerly famed for its olive oil, stored and clarified in rock-cut cisterns, it exports wine and fruit, but the output of oil has declined. In the vicinity there are stone quarries. Tunny fishing is engaged in. As the "beautiful city" it was founded by Greeks, and in Roman imperial times was known as Anxa. Pop. 30,000.

Gallipoli. Peninsula of Europe. Anciently known as the Thracian Chersonesus, this tongue of land is 52 m. in length from the isthmus of Bulair in the N. to Cape Helles (Helles Burnu), its S. extremity, and varies in width from 2 m. to 12 m., its broadest part, from Kilid Bahr, on the W. side of the Narrows of the Dardanelles, to Cape Suvla (Suvla Burnu), being measured from S. to N. The isthmus of Bulair is 3 m. across, with the Gulf of Saros on the W., and the S.W. end of the Sea of Marmora, above Gallipoli Strait, on the E. The isthmus is strongly fortified by the Bulair Lines.

The E. shore of the peninsula forms the W. side of the Dardanelles, and is of enormous strategical importance. Its W. shore fronts the Gulf of Saros on the N., and the Aegean on the S., opposite the island of Imbros, about 20 m. W. The peninsula is covered with rocky ridges and hills, some of which, in the Karaman Dag, W. of Gallipoli, the Chinar Dag, near the hamlet of Karnabli, about three m. from the Gulf of Saros, and the Sari Bair, looking over the Aegean, rise to a height of nearly 1,000 ft. Along the coast, which has only two good openings, Suvla Bay on the W., and Morto Bay on the S., are sandy beaches, that soon give place to

craggy and precipitous headlands, over 100 ft. in height. From Gallipoli there is a poorly paved road S. to Maidos, about 2 m. above the Narrows, which is continued to Kilid Bahr, whose fortifications, with those of Chanak on the other side of the Dardanelles, command the channel, and goes on to Krithia, near which is the height of Achi Baba, 600 ft. The other roads are mere tracks. The population is sparse, and apart from the town of Gallipoli there are only some small and squalid villages.

The most important place in the peninsula is Kilid Bahr, from its military significance, at the foot of

the Pasha Dag, 700 ft. high. Mohammed II, the Conqueror, who took Constantinople in 1453, founded it, and it came to be termed the castle of Europe, just as Chanak opposite it was called the castle of Asia. In the 17th century the Turks constructed fortifications at Sedd-el-Bahr, at the S. end of Gallipoli, and at Kum Kale, on the Asiatic side, at the entrance to the Dardanelles from the Aegean. In common with the neighbouring shores of the Bosphorus and Sea of Marmora, Gallipoli is within the zone of the Straits under a commission appointed by the League of Nations. See Achi Baba, illus.

GALLIPOLI: THE CAMPAIGN OF 1915

H. W. Wilson, *Military and Naval Critic of The Daily Mail*

A sequence of articles deals with Gallipoli and its history. The ports of this name and the peninsula are described; then comes the following article on the campaign of 1915. The landing and the evacuation are next described in detail. For the naval operations see Dardanelles. See also Hamilton, Sir Ian; Krithia; Suvla Bay

On Jan. 2, 1915, the Russian government appealed to Great Britain for action against Turkey, in order to relieve the pressure on the Russian army in the Caucasus. A promise was given by the British government that a demonstration would be made, and after much discussion, and against the advice of Lord Fisher, the point at which it was to take place was fixed by the Cabinet as the Dardanelles. This project gradually widened into a campaign for reaching Constantinople and opening the Black Sea, though in January, 1915, the Turkish forces in the Caucasus were beaten and forced back upon the defensive, so that the immediate danger to Russia passed. But the risk remained that she might collapse before the German attack in Poland, owing to the want of munitions, which she could neither manufacture nor import; and if the Black Sea could have been opened her forces could have been increased by some millions, and her artillery could have been provided with shells.

The first intention of the British was to deliver a purely naval attack, but, even before this had opened, it was decided that land forces must be available, if required. On Feb. 19 the naval attack on the Turkish forts commanding the Dardanelles began and was prosecuted as weather permitted till March 18, with no result to the Allies but heavy loss in men and ships. The Turks had been given such ample warning—possibly the Allied plans were betrayed to them by the Greek court—that they were ready, and, under the direction of Liman von Sanders, had thoroughly organized

their defences. At the outset Venizelos, the Greek prime minister, was anxious to join in the campaign, and offered the aid of the Greek fleet and Greek troops, but King Constantine at once repudiated this offer and forced his minister's resignation. A Russian corps was held at Sevastopol ready to strike at Constantinople, but at the end of April it was withdrawn to meet the Austrians in Poland.

Plans of Attack

On March 12 Sir Ian Hamilton was appointed to command the Allied landing force which was to be held ready. He was promised by Lord Kitchener 80,000 men, of whom about 15,000 would be French. The instructions given by Lord Kitchener were of a casual character. He believed that the whole Turkish defence system would collapse if only one British submarine entered the sea of Marmora; he placed the Turkish force at only 40,000 men; he thought that the southern part of the Gallipoli peninsula, which was reported by those on the spot to be very strongly entrenched and wired, was "open to a landing on very easy terms"; he declared that the Turks were "busy elsewhere"; and he appears at that date to have expected the navy to clear the passage, leaving the expeditionary force only the duty of occupying Constantinople. His instructions forbade operations on the Asiatic coast, which, according to the French ex-military attaché at Constantinople, was the most vulnerable point, and he seems to have been responsible for the plan eventually adopted, of landing at the tip of the mountainous, roadless and desolate Gallipoli peninsula,

and fighting a way over its series of rocky heights, which were covered with thorny scrub, and almost waterless in summer.

The landing of the expeditionary force could not be carried out promptly, after the failure of the



Gallipoli. General map of the district

naval attack, as the transports had not been loaded in such a manner as to permit a rapid disembarkation on a hostile coast. Sir Ian Hamilton had no appliances, and his picked regular division, the 29th, had not arrived. He decided to withdraw the transports to Egypt, there to reload them.

The First Landing

Not till April 23 were they back at the Dardanelles, and on April 25 the landing took place, with a total force of about 90,000 British and French. No attempt was made to seize the Bulair isthmus, the most vital point if Gallipoli was to be secured. Feints were made by the French on the Asiatic coast, and by the British at several other points, but the main landings took place at open beaches on the Gallipoli peninsula. By great heroism, and in spite of very heavy losses, under cover of the fire of the fleet, the Allies established themselves ashore.

They found themselves short of artillery and ammunition, and still shorter of water, confronted by a superior Turkish force who were well entrenched, amply supplied with machine guns and artillery, and protected by barbed wire, holding a succession of six parallel ridges.

At the southern tip of the peninsula by May 5 the Allies were less than a mile S. of Krithia, but the British loss to that date had been 13,979, and ammunition was running very low. On May 6 a second French division began to arrive, and the second battle of Krithia opened, but it brought only a trifling advance, purchased with heavy loss. The Australians, who had been landed at an isolated beach lacking land communication with the rest of the Allied force, were violently counter-attacked by the Turks on May 10, and again on May 18-19, but these attacks were repulsed, though not without difficulty. The

Allies, in fact, were everywhere held in a siege war for which they lacked the necessary ammunition and equipment. The appearance of German submarines at the Dardanelles on May 25 endangered the whole expedition, but, fortunately, the German boats were very timidly used. On June 4 a general attack was delivered on the Turkish defences at Krithia, and was repulsed with severe loss, though on June 21 the French made a small advance. A week later, on June 28, the Australians improved their position, carrying five lines of trenches.

On July 12 the Allies, who had now been reinforced by a fresh British division, delivered a frontal attack on the Turkish defences at Achi Baba, which was continued on the following day with no result but a small gain of ground and heavy losses. The British government had now, however, reluctantly decided to send out strong reinforcements which would raise the total



Gallipoli. Map showing the scene of the campaign

strength of Sir Ian Hamilton's army to 100,000 effective infantry. These reinforcements were to be employed mainly in an advance from Suvla Bay, which, if successfully carried out, would turn the Turkish defences in the southern part of the Gallipoli peninsula, and in a vigorous attack from the Australian positions on the Turkish entrenchments about Sari Bair.

On Aug. 6 the Allies attacked in the S. of the peninsula to hold the Turks, and fighting there continued for six days with little result; simultaneously, the advance was begun from the Australian front on Sari Bair; and a landing was successfully effected at Suvla Bay, the Turks there being completely surprised. But at every point the operations miscarried. By Aug. 10 the Suvla attack had completely failed; it was

renewed on Aug. 21 without a gleam of success. Before this last attack Sir Ian Hamilton telegraphed a request for 45,000 drafts and 50,000 new formation troops in addition, which the British government was unable to grant. Lord Kitchener's hope that the Turks would run when British submarines passed up the Dardanelles had proved quite chimerical.

Recall of Sir Ian Hamilton

On Oct. 11 the government asked for an estimate of the losses likely to be involved in the evacuation of the peninsula, and when Sir Ian Hamilton replied that "we might have a veritable catastrophe," he was recalled and replaced by Sir C. C. Monro. The Allied force had fallen to 50,000 fit men; sickness was growing; the daily wastage was nearly 1,000; the enemy was being strongly reinforced, and with the German advance through Serbia there was every probability that at an early date heavy guns would reach the Turks and blow the Allies out of their positions. After great hesitation, on Dec. 8 the British cabinet ordered the evacuation of the Suvla and Anzac positions, which was carried out without any loss on Dec. 20, by a most brilliant operation. On Dec. 27 the evacuation of the position at Cape Helles was sanctioned and was carried out on Jan 8-9, 1916.

Thus ended the disastrous Gallipoli expedition. In it from first to last 468,987 men were employed by the British, with losses of 33,522 killed, 7,636 missing, and 78,420 wounded, in addition to an enormous total invalided. The French force employed was probably over 80,000, with proportionate casualties. The causes of the failure were inadequate strength—for the Allied forces were thrown in piecemeal, and there were never more than 100,000 infantry available; defective ammunition supply; and the defiance of all principles of naval and military strategy. These operations had an unfortunate effect on the campaign in France, diverting men and munitions from it at a critical time, and they certainly encouraged Bulgaria to throw in her lot with the Germans. The Allies attacked



Gallipoli. The Cape Helles sector, where the principal landings were made



Gallipoli. The British camp at Gully Beach, a typical piece of scenery on the Gallipoli peninsula

the Turks where they were the strongest and best prepared. At the same time it is true that the Gallipoli campaign prevented the Turks from concentrating against Russia, and inflicted upon them very heavy losses, totalling, according to Liman von Sanders, 66,000 killed and 152,000 wounded.

On Nov. 8, 1918, under the conditions of the armistice with Turkey, the Gallipoli forts and peninsula were occupied by British troops, and on the following day the first British ships since the outbreak of war passed up the straits for Constantinople. But though the plans of the mine-fields had been surrendered by the Turks, four days passed before Constantinople could be reached—a point of importance in weighing any possibility of success in the Allied naval attacks of Feb. and March, 1915.

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Gallipoli, LANDING AT. British operation which opened the campaign in Gallipoli in April, 1915. After the failure in March, 1915, of their naval efforts to force the Dardanelles, the Allies attempted to open the Straits by the capture of Gallipoli. After reconnaissances, Sir Ian Hamilton had selected as landing-places the beach at the N.E. corner of Morto Bay, designated S; the beaches on each side of Cape Helles, that on the E. being called V, that on the W. W, and also Lancashire Landing; the beach above Tekke Burnu, known as X, and also as Implacable Landing; the beach due W. of Krithia,

called Y; and the beach at Gaba Tepe called Z and later Anzac. The covering force of the 29th Division left Mudros on the evening of April 23, for S, V, W, X, and Y. The landings V, W, and X were to be the main operation, the others being intended to protect the flanks and harass the Turks.

After concentrating at Tenedos on April 24, the troops stood off Cape Helles before dawn next day. While the warships bombarded the Turks' defences, the attacking force got into small boats and made for the shore. By 7.30 a.m. beach S was captured by the 2nd South Wales Borderers, at the cost of only 50 casualties. The landing on beach Y, undertaken by the King's Own Scottish Borderers and the Plymouth (Marine) battalion, R.N.R., was completely successful. So difficult was the terrain that the Turks had thought it unnecessary to defend it, and Lieut-Col. Koe's men scaling the precipitous cliffs established themselves on the top. Later in the day, however, they were heavily attacked by the Turks, and on the morning of April 26 were compelled to re-embark. The withdrawal was safely accomplished, the wounded, stores, and ammunition being saved. The failure of this landing was offset by the fact that the stout resistance of the British contributed to the success of the main operation by detaining in the meantime large Turkish forces at Y.

Under cover of the guns of the Implacable, the 2nd Royal Fusiliers landed on beach X early in the morning of April 25, and advancing attacked the Turks on Hill 114, between V and W beaches, but were driven back. Reinforced afterwards by two battalions of the 87th brigade, they entrenched

on a line half a mile round the landing place, and got into touch with the Lancashire Fusiliers on W beach.

W beach consisted of a strip of sand, 350 yds. long, and from 15 to 40 yds. wide, flanked by high cliffs, but with an easier approach over dunes in the centre to the main ridge. The Turks had strongly fortified the place with wire entanglements and machine guns. On the high ground beyond were well-sited trenches, and beyond these two strong infantry redoubts. At 6 a.m. on April 25 the 1st battalion Lancashire Fusiliers reached the shore under a murderous fire, and supported by the warships broke through the entanglements and, re-forming, attacked the enemy. Undeterred by land mines, they took three lines of trenches by 10 a.m. Half an hour earlier other troops were disembarked, and before noon a junction was effected with the force on X beach. In the afternoon the Worcester Regiment stormed Hill 138 and the redoubt on it, on the right of the advance, and an attempt was made to join hands with the troops on beach V who had been unable to make headway. As night fell the British in front of beach W held the ground from east of the Cape Helles lighthouse, through Hill 138 to Hill 114, and during the night repulsed several determined counter-attacks.

Meanwhile the attempt to land on beach V had not gone well. For this the collier River Clyde had been specially prepared for the disembarkation of troops. She had 2,000 men on board—Dublin Fusiliers, Munster Fusiliers, half a battalion of Hampshires, the West Riding Field Company, and other troops. The beach, a strip of sand 350 yds. long and ten wide, is

immediately W. of Sedd-el-Bahr, and the terrain rising from it is a natural amphitheatre of grassy slopes, topped by a village and the ruins of the old fort of Sedd-el-Bahr. The beach was protected by heavy wire entanglements, and above these were lines of well-fortified trenches.

Early in the morning of April 25 three companies of the Dublin Fusiliers were to be towed ashore and begin the attack; but the River Clyde came into position in advance of the tows, and the collier and the tows beached at the same time. The Turks opened a very heavy fire, only a small number of the Dublin Fusiliers getting ashore. Owing to a strong current the plan for the unloading of the troops failed, and during the rest of the day attempts to land had to be discontinued. After nightfall the troops were disembarked. Next day, under cover

other material gradually during ten successive nights, while the firing lines apparently were held as usual during the day, but were also being gradually evacuated.

A beginning was made on Dec. 8 at Suvla and Anzac. Men, guns, and stores were withdrawn according to plan, and the hospitals were all evacuated. The bombardment of the Turkish lines was maintained to as great an extent as was possible, and the enemy was deceived still further by bogus guns being emplaced in the positions of the real guns which had been taken away. The final embarkation was fixed for Dec. 18 and 19. On the latter day a covering attack was made by the forces in the Krithia area, at a cost of 283 casualties. By 5.30 a.m. on Dec. 20 the last man quitted the British trenches in the Suvla-Anzac area, the transports stole out of the bay, and the warships followed later.

French made use of beach S, the British of the other beaches. On Dec. 29-31 the 52nd Division made a demonstration to throw dust in the enemy's eyes, and for some days afterwards a fairly constant and heavy fire was kept up all along the Allied front. Two nights were allotted to the final embarkation—Jan. 7 and 8. Positions covering the landing-places were got ready, and a zone of embarkation was occupied, under Major-General Lawrence, commanding the 52nd Division.

A period of calm, fine weather followed the great storm of the night of Dec. 20, and was taken full advantage of, but as there might be a sudden and disastrous change the evacuation continued with all possible speed. In the afternoon of Jan. 7 the Turks suddenly opened a heavy fire on the trenches held by the 13th Division and the Naval Division,



Gallipoli. French camp at Sedd-el-Bahr with large ammunition store. The transport River Clyde, which was used in the landing, is seen on the beach

of the fire of the warships, the attack was renewed, and by 2 p.m. the Turkish positions were taken by storm. By the evening of April 27 the British forces had established themselves on a line about 3 m. long from N.E. of Tekke Burnu to Eski Hissarlik Point. A war memorial is to be erected at Cape Tekke Burnu, the S.W. extremity of the peninsula. See Gallipoli Diary, Sir Ian Hamilton, 1920.

Gallipoli, EVACUATION OF. In Nov., 1915, the British Government, acting on the opinion of Gen. Monro, who had replaced Gen. Hamilton, and whose opinion was endorsed by Lord Kitchener after a visit to Gallipoli, decided to evacuate the peninsula. The plan of the operation was worked out by Gen. Birdwood, the idea being to remove the guns and

The evacuation was absolutely successful. The Turks were completely unaware of what had taken place, and went on bombarding the empty British positions.

The very success of the evacuation of the Suvla-Anzac area militated against the chances of a like success in the Krithia or Cape Helles area. It was not to be expected that the enemy would be deceived a second time in the same way. Yet actually that was what happened, perhaps because the Turks never imagined that the same thing could be worked twice. In the last days of 1915 the evacuation began—men, guns, and stores being taken down to the beaches of Helles, in the same way as at Suvla and Anzac, while the firing lines of the British appeared to be maintained precisely as if nothing of the sort was proceeding. The

and exploded mines. For some moments it seemed as if a general action would have to be fought, but the enemy did not repeat his effort, and in the course of the ensuing night the Scottish Lowlanders embarked.

Next day the weather was fine in the morning, but broke in the afternoon, making the final steps of the evacuation very difficult, the landing-stages and connecting piers being washed away. Yet by 5.30 a.m. on Jan. 9 beaches Y and W were cleared, and the last troops of the 29th Division were all embarked by 3.30 p.m. The storm had at least the effect of covering the final withdrawal from the enemy, who, as at Suvla-Anzac, had no notion that the Allies had evacuated Gallipoli. The first intimation that reached him was conveyed by the

blazing up on the beaches of the stores which had been left behind, and which had been fired simultaneously by time-fuses. Then he heavily shelled the abandoned beaches and trenches, nor did he cease firing until the sun rose and revealed that the Allies had got clear away. The total casualties incurred in the operation amounted to one man wounded. The one unequivocal and perfect success of the Gallipoli Expedition was the evacuation of the peninsula.

Gallium. Metal belonging to the zinc group. It was discovered in 1875 by Lecoq de Boisbaudran, the French chemist, in samples of zinc blende obtained in the Pyrenees. Its chemical symbol is Ga.; atomic weight, 69.8; specific gravity, 5.9. Its melting-point is only 86° F., and once melted it remains liquid like mercury even at low temperatures. It is of white, lustrous appearance, does not tarnish in the air, and is not affected by water at ordinary temperatures.

Gallon. British standard measure of liquid and dry capacity. The exact volume of the gallon has varied from time to time, that of Henry VII being 274½ cubic ins., and the wine gallon of Queen Anne, 1707, being 231 cubic ins., but it became standardised by the Act 5, Geo. IV, c. 74, in 1824, as containing 277.274 cubic ins. This figure was fixed by taking the volume of 10 lb. of distilled water measured at barometric pressure 30 ins., and temperature 62° F.

The gallon is divided into four quarts or eight pints, and equals 4.54346 litres. Two gallons make one peck. The gallon in the U.S.A. and Canada is that of Queen Anne, 231 cub. ins. The word itself is of doubtful origin, possibly connected with the French *jale*, bowl, the -on being augmentative, and thus meaning a large bowl.

Galloon (Fr. *galon*, Span. *galón*). Worsteds lace or trimming of cotton or silk, or woven with a metallic thread. It is used on uniforms.

Galloway. District of S.W. Scotland. Comprising the counties of Kirkcudbright and Wigtown, it is now divided into three portions—Upper, Lower, and the Rhinns of Galloway. It is noted for a celebrated breed of horses and hornless cattle. It gives its name to a div. returning one member to Parliament.

Galloway, MULL OF. Promontory, the extreme S. point of Scotland. It has a lighthouse (86 ft. high), and there are remains of Scandinavian defences and the chapel of S. Medan, which was erected around a natural cave.

Galloway, EARL OF. Scottish title borne since 1623 by the family of Stuart. The first earl was Sir Alexander Stewart, a connexion of the Stewart kings of Scotland and the descendant of men who had played a part in their country's history. In 1607 he was made Baron Garlies, and in 1623 earl of Galloway. James, the 2nd earl, was a royalist during the Civil War, and James, the 5th earl, was a politician in the time of Anne.

John, the 7th earl, a member of George III's household, was made a peer of the United Kingdom in 1796, and his son George, the 8th earl, was an M.P. and a lord of the admiralty. Randolph, the 11th earl (1836–1920), served with the Black Watch in the Crimea and the Indian Mutiny. He was succeeded by his eldest son (b. 1892), who served in the Great War with the Scots Guards, and was a prisoner of war in Germany for a long time. The extensive family lands are mainly in Kirkcudbrightshire and Wigtownshire. The earl's eldest son is known as Lord Garlies.

Gallowglass OR **GALLOGGLASS.** Name given to the members of the armed retinues of ancient Irish and Scottish chiefs. They were heavy-armed foot soldiers, in contrast with the kerns or caterans, who carried only light weapons. The word is an adaptation of the Gaelic *gall-oglach*, meaning a foreign servitor.

Gallows. Apparatus used for the execution of criminals. It consists usually of two posts with a horizontal beam, to which is fastened the execution rope. In some forms of gallows there is only one upright post, with a projecting beam. This form is more generally called a gibbet, and from them were hung malefactors in chains as a warning to others.

Till the passing of the Act of 1868 gallows were erected in public, the most notorious being those at Tyburn, and in front of Newgate. The criminal was slowly strangled, the trap-door and drop being modern. See Execution; Gibbet.

Gall-stones OR **BILIARY CALCULI.** Masses consisting chiefly of cholesterol and bile-pigments which are formed in the gall-bladder, and much less frequently in the substance of the liver. In the gall-bladder the number of calculi may vary from a single stone, perhaps measuring as much as four inches across, to many hundreds of small stones; those formed in the liver are usually small grains. The essential cause of gall-stones ap-

pears to be catarrhal inflammation of the mucous membrane of the gall-bladder, which is probably set up by micro-organisms. In a considerable number of cases the condition has followed enteric fever. The formation of gall-stones is rare in those below 25 years of age, and most frequently occurs after the age of 40. Women,



Gallows. Wayside gibbet formerly used for the execution of highway robbers

especially those who have borne children, are much more liable to the condition than men. Sedentary occupation, over-eating, and constipation are predisposing factors.

Gall-stones may be present in the gall-bladder for years without causing any symptoms. The passage of small stones and biliary "sand" from the gall-bladder into the intestine may give rise to spasmodic pain, generally attributed to indigestion. The passage of a rough or larger stone may set up violent biliary colic, with agonising pain, vomiting, sweating, and often a rise of temperature. These symptoms abate when the stone passes into the intestine. Sometimes the calculus becomes impacted in the common bile duct, the channel leading from the gall-bladder to the intestine, and this may give rise to intense jaundice, followed by inflammation of the liver. During an attack of biliary colic the patient should be given copious draughts of alkaline waters and the pain may be relieved by hot baths, hot fomentations over the liver, and hypodermic injections of morphia. Severe cases may demand surgical treatment.

Gallus, GAIUS CORNELIUS (d. 26 B.C.). Roman poet, born at Forum Julii (Fréjus) in Gaul. His distinguished public career, under Augustus, culminating with the

governorship of Egypt, was brought to an abrupt conclusion by his disgrace and suicide at the age of 43. His works, four books of love poems, are lost, but there is no doubt of his eminence in Latin literature. In technique Gallus was ranked with Horace and Virgil; he brought the elegiac couplet to a high pitch of perfection.

Gallus, TREBONIANUS. Roman emperor, A.D. 251-253. Governor of Lower Moesia during the campaign of his predecessor



Trebonianus Gallus,
Roman emperor

Decius against the Goths, it is said that his deliberate failure to effect a junction with Decius led to the defeat and death of the latter in the

marshes of the Dobruja. Proclaimed emperor, he concluded a humiliating peace with the Goths, and proceeded to Rome, but in 253 he was defeated and slain at the battle of Interamna (Terni) by the usurper Aemilianus.

Galluzzo. Village of Italy. It is 3 m. S.W. of Florence, and in the prov. of that name. The Certosa, an old Carthusian monastery, lies off the high road about $\frac{1}{2}$ m. beyond the village. It is built on the side of a hill, and has the appearance of a medieval fortress. Within it are some early Renaissance monuments. Pop. 20,000, of whom only about one-third live in the village itself.

Gallwitz, MAX VON (b. 1852). German soldier. Born May 2, 1852, at Breslau, where he was

educated, he became lieutenant of artillery in 1872, and in 1883-85 was attached to the general staff. In 1901 he commanded an artillery brigade, and in 1911 was general of artillery and inspector-general of field artillery. In the Great War he was prominent as one of Hindenburg's subordinates in the battle of the Masurian lakes in 1915.

In July, 1915, he forced a passage of the river Nareff, cooperating in the general pressure that compelled the Russians to evacuate Warsaw early in Aug. In Oct. he commanded one of the armies which under Mackensen overran Serbia. In 1916 he fought in Galicia against Brusiloff, and later in that year

had command of an army on the Somme. After the battle of the Somme he led the German fourth army in the Verdun area, but was defeated there in Aug.-Sept., 1917, and relieved of his command. He commanded an army group on the W. front in the spring of 1918.

Gally, MERRITT (1838-1916). American inventor. Graduating at Rochester University in 1863, he became a Presbyterian minister. Resigning the ministry owing to a throat affection, he took up the study of mechanics, and in 1869 patented the Universal Printing Press, a linotype machine, and over 100 other inventions. He died March 7, 1916.

Galop (Fr.). Dance popular in England at the end of the 19th century. It is danced to two-four time, the movements being a quick sliding step down the room and then one of rapid revolution.

Galston. Police burgh and parish of Ayrshire, Scotland. It stands on the Irvine, 5 m. E. by S. of Kilmarnock on the G. & S.W.R. The centre of a colliery and agricultural district, Galston has muslin, lace, and blanket factories. Market day, Wed. Pop. 5,296.

Galsworthy, JOHN (b. 1867). British novelist and dramatist. Born at Coombe, Surrey, he was educated at Harrow and at Oxford. Called to the bar in 1890, he practised little, but travelled extensively and devoted himself to writing, at first under the pseudonym of John Sinjohn. His first notable book was a volume of tales, *The Villa Ruben*, 1900, and from that date he produced a constant succession of novels and plays.

The Island Pharisees, 1904; *The Man of Property*, 1906; *The Country House*, 1907; *The Freeland*, 1915, are novels chiefly concerned with the contemporary life and ideas of the English landed classes, described with critical shrewdness but with scrupulous fairness. *Fraternity*, 1909; *The Patrician*, 1911; *The Dark Flower*, 1913; *Saint's Progress*, 1919, and *In Chancery*, 1920, are also noteworthy studies of contemporary life.

As a dramatist, Galsworthy takes a high place in the modern history of the English stage, his plays being marked always by high technical skill, sincerity of purpose, and intrinsic interest. In them, as in his novels, he turned a searching light on to the accepted social and moral conventions of contemporary society, on the administration of justice, for instance, in *The Silver Box*, 1906; on the relations of capital and labour in *Strife*, 1909; on prison problems in *Justice*,

1910; on politics and principles in *The Mob*, Manchester, 1914; on the supplanting of the old ruling class in rural life by the new in *The Skin Game*, 1920. Other noteworthy plays are *The Little Dream*, 1911; *The Pigeon*, 1912; and *A Bit o' Love*, 1915.

Galsworthy has also written short stories and many essays on various subjects. He is widely respected as a publicist, his generosity of temper and fine sense of justice bringing him forward often as a champion of humanitarian causes or to call public attention to injustices of the social system. Some of his essays on current problems have been republished in *A Sheaf*, 1916; and *Another Sheaf*, 1919. A collection of his verse was published as *Moods, Songs, and Doggerels*, 1912. He contributed an introductory study to the *Universal Encyclopedia* (see p. iii). In Jan., 1918, Galsworthy declined the offer of a knighthood, and during 1919 spent some months lecturing in the U.S.A. on Anglo-American friendship and kindred subjects. See John Galsworthy, S. Kaye Smith, 1916.

Galt. Town of Ontario, Canada, in Waterloo co. It stands on the Grand river, 24 m. N.N.W. of Hamilton. It is served by the C.P.R. and G.T.R., and electric rlys. connect it with Hamilton and other adjacent towns. Galt is a manufacturing town, electric power being obtained from the Niagara. Its industries include the production of iron goods, woollen goods, clothing, and flour, and limestone quarrying. Pop. 10,299.

Galt, SIR ALEXANDER TILLOCH (1817-93). Canadian statesman. Son of John Galt (q.v.), he emigrated to Canada in 1835, and took part in the development of Quebec. In 1849 he entered the Canadian legislature, and from 1858-62 and from 1864-67 was finance minister.



Sir A. T. Galt,
Canadian statesman

He made the financial arrangements of the dominion when established in 1867, and was its first finance minister. From 1880-83 Galt was high commissioner for Canada in London, and died at Montreal on Sept. 19, 1893. See *Life and Times of Sir Alexander Tilloch Galt*, O. D. Skelton, 1920.

Galt, JOHN (1779-1839). Scottish novelist. Born May 2, 1779, at Irvine, Ayrshire, he was a clerk at Greenock, first in the customs and then in a mercantile house. In

1809 he travelled abroad on business, meeting Byron on his travels. In 1813 he issued his Letters from the Levant, and in 1821 The Annals of the Parish, his best known book. There followed The Entail, 1823; The Omen, 1825; and The Last of the Lairds, 1826. The years 1826-29

he spent in Canada as agent of the Canada Company. Later he brought out Lawrie Todd, 1830, and Boyle Corbet, 1831, novels of settler life in America, and a Life of Lord Byron, 1830. He died April 11, 1839.

Galton, Sir DOUGLAS STRUTT (1822-99). British scientist. Born July 2, 1822, and educated at



Sir Douglas Galton,
British scientist
Elliot & Fry

Geneva and Rugby, he entered the Royal Engineers from Woolwich in 1840. After serving in the Mediterranean he, in 1846, joined the Ordnance survey. In 1847 he became secretary to the rly. commission, and in 1854 secretary of the rly. dept. of the board of trade. From 1860-69 he was at the war office, being appointed assistant under-secretary for war, 1862. Thence he was transferred to the office of works as director of public works and buildings, retiring in 1875. Galton had many interests, particularly in physical science, Red Cross work, and education, but he is best remembered as an expert on sanitation and hygiene. He was given the K.C.B. in 1887, and died in London, March 18, 1899.

Galton, Sir FRANCIS (1822-1911). British anthropologist and meteorologist. Born near Birmingham, Feb. 16, 1822, a cousin of Charles Darwin, he studied medicine, travelled in the Sudan, 1846, and explored Damaland, 1850. He formulated the theory of anticyclones and new methods of weather-charting, embodied in Meteorographica, 1863, from which arose his long associa-



Sir Francis Galton,
British scientist

tion with the Meteorological Council. His works, Hereditary Genius, 1869, and Inquiries into Human Faculty, 1883, established the principles of what he termed eugenics, in furtherance of which he founded a laboratory, 1904, bequeathing £45,000 for a chair in London. He devised composite portraiture and systematised fingerprint methods. He was knighted in 1909, and died Jan. 17, 1911. See Finger Print; consult also Memories of My Life, 1908.

Galtonia. Small genus of bulbous herbs of the natural order Liliaceae. Natives of S. Africa.



Galtonia leaf and truss of bell-shaped flowers

they have more or less erect strap-shaped leaves, about 30 ins. long. They have also a tall scape (4 ft.) bearing at its summit a loose truss of drooping bells which, in the case of *G. candicans*, the best known of the two species, are pure white and fragrant.

Galty or GALTÉE. Range of mts. in Ireland. It extends for 15 m. in an E. to W. direction through the counties of Tipperary and Limerick. Galtymore, the highest peak, attains 3,015 ft.

Galvani, LUIGI (1737-98). Italian physiologist. Born at Bologna, Italy, Sept. 9, 1737, he became, in 1762, professor of anatomy at Bologna University, resigning, for political reasons, in 1797. By experiment, largely on frogs, he discovered animal electricity, and his investigations are commemorated in certain electrical manifestations and terms, e.g. galvanism and galvanometer. His work On the Force of Electricity in Muscular Movement was published in 1791. He died Dec. 4, 1798. His collected works were published at Bologna, 1841-42.

Galvanic Battery. Name given to a cell for producing electricity by chemical action. The name voltaic cell is now generally used in place of galvanic battery. Both names are derived from those of the electrical pioneers, Galvani and Volta. See Cell.

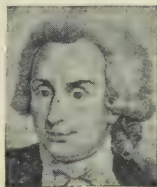
Galvanising. Method of coating iron with zinc. It was devised by Paul Jacques Malouin, the French chemist, in 1742. In galvanising, the zinc coating does not merely lie on the surface of the iron as a sheet of paper might, but actually combines or alloys with the iron, penetrating the latter to an appreciable extent. The modern process is in all essentials as proposed by Malouin, the principal departure being the use of sal-ammoniac as a covering to the molten zinc and as a flux, a modification patented by H. W. Crawford in 1837.

To-day the process is chiefly applied to the coating of thin sheets of iron or steel intended to be used for roofing and other building purposes, and to wire. Sheets are usually delivered black with the scale on them to the galvanising works, where the scale is removed, then dipped in a "pickle" of hydrochloric acid or hot sulphuric acid, withdrawn, washed with water, often rubbed with sand, and then passed through a bath of molten zinc covered with sal-ammoniac. As the sheets emerge they are scrubbed with revolving wire brushes. When desired, the sheets are subsequently corrugated. Wire for galvanising is reeled continuously through both the pickle trough and the zinc bath. Wire netting is woven while black and then galvanised. For the best sheets a small percentage of tin—2 p.c. to 3 p.c.—is added to the zinc. The proportion of zinc taken up by the metal may range from 25 p.c. in the case of fine wire to 6 p.c. in anchors, chains, and other large objects.

Galvanised sheets, though extremely useful, cannot be employed in contact with acids or caustic alkalis or for the preparation of containers for food products where organic acids may be present. Even the ordinary atmosphere of a manufacturing town, containing, as it may, appreciable quantities of sulphurous gases and moisture, will attack them. See Zinc.

Galvanometer. Instrument for detecting the passage of an electric current, or, in its refined form, for measuring small electric currents.

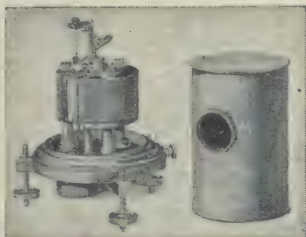
A simple galvanometer consists of a light, magnetised "needle" swinging freely on a pivot and surrounded by a coil of insulated copper wire. If an electric current



Galvani



Sir Francis Galton,
British scientist



Galvanometer. D'Arsonval moving coil type. Left, the instrument with case removed. Right, diagram showing chief parts. A, permanent magnet; B, coil; C, soft iron cylinder concentrating magnetism on the coil; D, mirror; E, gravity damper

is passed through the coil a magnetic field is established which acts upon the permanently magnetised needle and causes it to deflect in a direction and to an extent varying with the direction and strength of the electric current. Great sensitivity may be obtained in the "moving-needle" type of galvanometer, but the magnetic field of the instrument is easily disturbed. This defect may be mitigated by employing two needles and two coils, the needles being so arranged that the effect of magnetism, other than that of the coils, is neutralised.

A less sensitive, but much used, type of galvanometer has fixed permanent magnets and a moving coil. The current is conducted to the suspended coil through the suspensions, the stationary permanent magnet system producing a magnetic field so strong as to be little affected by external influences.

For delicate work the deflection is enormously magnified by the use of a small mirror, which reflects a beam of light on a distant scale.

The resistance to the deflection of the pointer or the mirror, as the case may be, is adjusted by a permanent magnet, by gravity, or, when the moving portion is suspended on a fibre, by the torsion of the material. Excessive swing of the moving parts is "damped" by a light vane of mica or aluminium.

For measuring alternating currents an ordinary galvanometer is obviously unsuitable, but alternating currents have been indirectly measured by their heating effect in the coil which generates direct current in a thermo-couple. One form of alternating-current galvanometer depends for its action upon the untwisting of a strip by the heating action of the current. In another—the Einthoven "string" galvanometer—a very fine silver wire lies between the poles of an electro-magnet, which is independently excited. An alternating current passing through the wire

causes it to vibrate; the amplitude of the vibrations is observed by a microscope or by luminously projecting an enlarged image of them upon a screen or photographic plate. See

Am meter; Voltmeter; Meter, Electric.

Galveston.

City and port of entry of Texas, U.S.A., the co. seat of Galveston co. Situated at the N.E. end of Galveston Island at the entrance to Galveston Bay, it is 49 m. S.E. of Houston, and is

served by several rlys., including the Galveston, Houston and Henderson, which connect the city with the mainland. Galveston is the leading port of the Union for the exportation of cotton, and is a flourishing seaside resort.

The principal buildings include the court house, city hall, Y.M.C.A. building, custom house, post office,

of the exports, next to which come wheat, cotton-seed cake, cotton-seed oil, and linseed cake. Other products shipped are flour, machinery, lumber products, and agricultural implements. The leading imports are coffee, sugar, corn, cattle, and bananas. Pop. 42,650.

Galveston was first visited by Spaniards about 1781, by whom it was called Galveston probably in honour of Bernardo de Galvez, governor of Louisiana. During the Civil War it was blockaded by the Federal navy, which occupied it on Oct. 8, 1862, but capitulated to the Confederates on the first day of the following year. In 1885 the city was badly damaged by fire, but a far greater catastrophe was the 1900 hurricane, the city being inundated to a maximum depth of 16 ft., 8,000 persons losing their lives, and £4,000,000 damage being done to property. Since then a massive sea-wall and a concrete causeway connecting the island with the mainland have been constructed, and the city has been lifted in some parts 19 ft. above its original level. In 1901 Galveston instituted the commission form of local government, widely adopted in the U.S.A.

Galveston Bay. Inlet of the Gulf of Mexico. Protected by the island of Galveston and by a narrow promontory stretching W.S.W., it extends inland for about 35 m.

Galvez, MARIANO (1795–1855). Guatemalan politician. Born in Guatemala, he became an active politician, being one of those responsible for the constitution of 1824. In 1825 he was president of the first congress of the Central American states. From 1831 to 1838

he was president of Guatemala, but he lost his power in 1838 and was soon exiled. Henceforward he lived mainly in Mexico and Peru.

Galway. County of Ireland. In the province of Connaught, its area is 2,370 sq. m., making it the second largest of the Irish counties. It has a coast-line of about 400 m. on the Atlantic, where are several bays with excellent harbours, and off which



Galway arms

are a number of islands; the former include Killary, Kilkieran, and



Galveston. Part of the docks of the Texas seaport

and public library. Among the educational institutions are S. Mary's University, the state medical college, the Ball high school, the cathedral school, the central high school for coloured students, the Ursuline convent, the Sacred Heart academy, and several public schools. The city is well provided with benevolent institutions, and the government maintains a marine hospital and quarantine and immigration stations.

Galveston has regular steamship communication with Europe, Asia, S. America and the ports of the U.S.A., and its annual foreign trade is valued at upwards of £50,000,000. Cotton accounts for more than three-fourths



Galway. Map of the second largest Irish county, with Galway Bay and the adjacent islands

Galway; the latter include the Aran Islands, Inishbofin, Gorumna, and Lettermore.

The country is one of the wildest and most beautiful parts of Ireland, especially its western portion. The eastern part is flat and boggy; the west, known as Connemara, contains the mountain group of the Twelve Pins. Joyce's Country is an adjacent mountainous district, while a third is called Iar Connaught. In the south are the Slieve Aughty Mts. and a stretch of the golden vale; on the north there is another fertile area.

The Shannon flows along the borders of the county, which has few other rivers. Lough Corrib is the most notable lake; it is 4 m. from Galway and is about 50 sq. m. in area. On it are a number of inhabited islands. The chief industries are the rearing of cattle, sheep, and poultry, while there are many fishermen here. Oats and potatoes are grown, limestone and marble are worked, and there are some manufactures of linens and woollens. The county is served by the M.G.W. of Ireland and the G.S. and W. Rlys. The chief places are Galway, Ballinasloe, Loughrea, Tuam, Oughterard, Clifden, Athenry, Portumna, and Gort. There are cathedrals at Tuam and Clonfert. A number of small places are visited by tourists and sportsmen. There are some prehistoric remains on the Aran Islands. Pop. 102,200.

Galway. Seaport, market town, and county town of Galway, Ireland. It stands on the N. side of Galway Bay, at the mouth of the Corrib, and is 130 m. from Dublin on the M. and G.W. Rly. It has a good harbour. There are some interesting old buildings, several in the Spanish style, and the town is divided into an old town and a

new town. In addition there is the Claddagh, a district inhabited by fisherfolk, who have some curious customs and are still to some extent a distinct community.

The chief church is S. Nicholas, an old foundation, which for long had a college attached to it. S. Augustine's is modern. As the chief town of Connaught, Galway has a university college. This was founded as Queen's College in 1848. The town has fisheries and a considerable shipping trade; its other industries include flour mills, distilling, and marble polishing. Owing to its situation on the most westerly harbour of the British Isles, it has been proposed several times to make it a great Atlantic packet station. Market days, Wed. and Sat. For purposes of local government Galway is an urban district. Salthill is a suburb visited as a pleasure resort. Pop. 13,250.

Galway Bay. Inlet on the W. coast of Ireland, between cos. Clare and Galway. It is protected at the entrance by the Aran Islands, which form a natural breakwater. Its length is 30 m., and breadth at entrance 22 m.

Galway, Viscount. Irish title borne since 1727 by the family of Monckton-Arundell. In that year John Monckton, an English M.P. (d. 1751), was made an Irish peer. He bought the estate of Serlby, Yorks, since then the seat of his descendants, and his son, the 2nd viscount, took the additional name of Arundell. His descendants still hold the title, George, the 7th vis-

count, succeeding in 1886. As Irish peers they could sit in the House of Commons, and nearly every one of them did so until 1887, when the 7th viscount was made a peer of the United Kingdom as Baron Monckton. *Prov. Gaulway.*

Galway Castle. Union Castle liner. Built at Belfast in 1911, she had a gross tonnage of 7,988. She was torpedoed and sunk whilst outward bound to S. Africa on Sept. 12, 1918, when over 150 lives were lost.

Gamaliel (d. c. 52). Jewish rabbi. The grandson of Hillel, he was an important member of the Sanhedrin. S. Paul attended his school at Jerusalem, as a youth. Famed for his learning, piety, and tolerance, he urged that the early preachers of Christianity should not be interfered with. The legend of his conversion to Christianity has no foundation.

Gamba (Ital., leg). (1) Abbrev. of viola da gamba, one of the large viols, played between the knees of the performer. (2) Organ stop, usually of 8 ft. pitch, with a reedy tone like that of the stringed instrument. *See Organ; Viol.*

Gambela. Trading station of Abyssinia, in the W. of the country. It stands on a tributary of the Sobat river, and is an important outlet for the trade in the W. It is leased to the Sudan government, and there is steamer communica-



Galway. University College, founded in 1848

tion with Khartum from June to Nov., via the Sobat river and the Bahr-el-Abiad or White Nile.

Gambetta, Léon (1838-82). French statesman. Born at Cahors, Lot, April 2, 1838, his father being a grocer of Genoese origin who had settled there, he became a law student in Paris, and was early prominent for his republican enthusiasm. Called to the bar in 1859, in Nov., 1868, he made a deep impression by his defence of the republican journalist, L. C. Delescluze, who had been prosecuted for proposing a monument to Charles Baudin, killed in the *coup d'état* of 1851. Elected to the Chamber in May, 1869, he became

a leader of the uncompromising anti-imperialist party. A speech attacking the Ollivier ministry in 1870 helped to bring about the



May plébiscite on the proposed constitutional changes. When the news of Sedan arrived, he proclaimed publicly the establishment of the republic, and became minister of the interior, Sept. 4, 1870. On Oct. 7 he escaped from the besieged capital in a balloon, and joined the government at Tours as minister of war as well as of the interior.

At Tours, and later at Bordeaux, aided principally by de Freycinet, he showed astounding energy, in most adverse circumstances, in levying and equipping fresh armies and organizing plans of national defence. Elected to the national assembly for Strasbourg, Feb., 1871, he resigned office when the surrender of Alsace was acquiesced in, and retired to Spain.

In the summer he returned to politics, founding the newspaper *La République Française* in Nov., 1871. Henceforth his energies, and his popularity assured by his oratorical gifts, were directed towards consolidating the new republic against monarchist influences, and to this end he was a determined opponent of MacMahon during his presidency. Gambetta was elected president of the chamber of deputies in Jan., 1879, and under Grévy's presidency was premier from Nov., 1881, to Jan., 1882, resigning on the defeat of his proposals for electoral reform. An accidental wound from a pistol brought about his death at his villa at Ville d'Avray, near Sèvres, on Dec. 31, 1882. The Gambetta monument in the Place du Carrousel, Paris, by Boileau and Aubé, was erected in 1886. On Nov. 11, 1920, to mark the jubilee of the third French Republic, Gambetta's heart was buried in the Panthéon, Paris. See *Liege*, Paul Deschanel, 1920.

Gambia. River of W. Africa. It rises in Futa-Jallon in French Guinea, flows generally westward for over 500 m., and falls into the Atlantic at Bathurst. At its estuary it is 12 m. broad, and it is navigable for 300 m.

Gambia. British colony in W. Africa. It is situated on both sides of the lower portion of the river Gambia, below the Falls of Barra Kunda, and includes the colony of St. Mary's Island and the five pro-

vinces, North Bank, South Bank, etc., which form a protectorate. The area of the colony proper is 4 sq. m., and that of the protectorate, which extends 250 m. inland, is about 4,500 sq. m. In 1618 James I granted a charter to a trading company which built Fort James, and in 1631, 1662, and 1783 other companies were founded. Formerly part of the W. African Settlements, it was made a separate colony in 1888. The capital is Bathurst (q.v.), on the island of St. Mary. The pop. (about 200,000) consists of Mandingos, Jolas, Sarahulis, and Fulas, four-fifths Mahomedans. The exports are chiefly ground-nuts, rubber, rice, hides, wax, and palm kernels.

Gambier, GAMBEIR OR PALE CATECHU. Extract prepared from the leaves and young shoots of *Uncaria gambier*, a climbing shrub which grows in the Malay Archipelago. The leaves are boiled with water, the liquid strained and evaporated until a soft extract is obtained. Gambier is used chiefly for tanning, the purer qualities being employed in medicine as an astringent. The Malays use gambier, in combination with areca and betel, for chewing.

Gambier. Group of seven small islands in the Pacific Ocean, belonging to France. They lie in lat. 23° 12' S. and long. 135° W. Total land area, 8 sq. m. The largest island is Mangareva, and all are of coral formation. The inhabitants are mostly Roman Catholic converts, with some immigrants from Easter Island. Pop. 1,533.

Gambier, JAMES GAMBEIR, BARON (1756-1833). British sailor. Born at New Providence, Oct. 13, 1756, he went to sea at 11 years of age. In 1778 he was captured by the French admiral d'Estaing, but was released after a few months, and was present at the relief of Jersey, 1779, and at the capture of Charleston, 1780. In 1794 he commanded the Defence, which, in the battle of June 1, was the first to break through the enemy's line. In 1795 he was promoted rear-admiral and a lord of the admiralty, becoming vice-admiral 1799. In 1800 he was commander-in-chief at Newfoundland, and in 1804 returned to the admiralty,

where he remained until 1806. During this period of office he ordered the discontinuance of the rule enjoining officers to enforce the salute from all foreign vessels within the king's seas, an order in force since the reign of John.

In 1805 he became admiral, and in 1807 sailed to the Baltic, bombarding Copenhagen and capturing the Danish fleet. For this he was raised to the peerage. In 1809 he commanded the Channel fleet when Lord Cochrane attempted to destroy the French fleet by fire-ships, an operation of which Gambier disapproved so strongly that he refused to help Cochrane, and himself demanded a court-martial for his failure of duty. He was acquitted, and retained his command until 1811, being promoted admiral of the fleet in 1830. He died April 19, 1833.

Gambit. Method of opening a game of chess in which by the sacrifice of a pawn or piece in one of the early moves a player seeks to obtain some advantage over his opponent. There are various gambits—the king's gambit, queen's gambit, king's knight's gambit, etc. On the opponent declining to take the piece offered, it is called the "gambit declined." The term comes from the Italian phrase *dare il gambetto*, to trip up (*gamba*, leg). See Chess.

Gamble, SIR DOUGLAS AUSTIN (b. 1856). British sailor. Born Nov. 8, 1856, he entered the navy in 1870. Lieutenant, 1879, and captain, 1899, he reached the rank of rear-admiral in 1908. From 1893-96 he was a member of the naval intelligence department, and naval adviser to the



Sir Douglas Gamble, British sailor
Dorchester



Gambia. Map of the British colony and protectorate bordering the W. African river of this name



Gambier
After Sir W. Beecher, R.A.

Turkish govt., 1909-10. He commanded the 6th cruiser squadron, 1910-14, and during the Great War the 4th battle squadron. In 1917 he retired with the rank of admiral.

Gambling. Staking money or other valuable commodity upon the as yet undecided issue of an event, particularly of a sporting event or of a game.

The practice is of undiscoverable antiquity, but has always been discountenanced by the statute law of civilized communities. Among the Greeks and Romans there were two principal games of chance, both played with dice. *Tesserae* were cubes, the faces marked I to VI as in modern dice, the points on the opposite faces totalling 7; the game was played with 3 *tesserae* shaken and thrown from a turret-shaped box upon the board; the highest throw, called *Venus*, was of 3 sixes, the lowest, or dog's throw, of 3 aces. *Tali*, or knucklebones, were oblongs, with two of the long sides broader than the others, and numbered 3 and 4, the narrower pair marked 1 and 6, and rounded ends unmarked.

Four *tali* were used, the highest throw being when all showed different numbers, the lowest when all came out the same. Odd and even, heads and tails, and mora, and an early form of backgammon were other games of chance in classical times. Games of chance were prohibited by law except during the Saturnalia in December, but gambling was rife in Rome.

According to Tacitus, the ancient Germans were bewitched with the spirit of play to an exorbitant degree. Their modern descendants were not innocent of the same vice, Wiesbaden, Homburg, and Baden-Baden being notorious gaming centres until their gambling-houses, with all the others in Germany, were abolished in 1872.

Cards were used for gambling there as they had been in England, as they were in Belgium, at Spa, and Ostend, upon the suppression of the German houses, until suppressed there too in 1902, and as they still are in France at such resorts as Aix-les-Bains, Trouville, and Biarritz, and especially in the principality of Monaco, the Mediterranean paradise in which roulette, trente-et-quarante, and rouge-et-noir are the triple-headed serpent. Systems innumerable have been devised by gamblers to render winning certain at all the games of chance, but never one of which the fallibility cannot be proved mathematically, or which cannot be defeated by the advantages

reserved by the bank as in fixing the maximum which it will pay on any chance and in retaining the *refait* of 31 at trente-et-quarante, and in the zero in roulette.

In England statute law against gambling originated in desire to protect the manlier sports of archery and the like from being abandoned in favour of idle games, but even Henry VIII, who was responsible for one of the earliest of these moral enactments, was not proof against the seduction of the dice. That reformed gambler, Theophilus Lucas, who wrote *Memoirs of Gamblers* as a warning to future generations, records that Sir Miles Partridge once played at dice with King Henry for the four largest bells in London, and won them. In the reign of Charles II the fashionable vice became a scandal. One statute of this period enacted that if any person by playing or betting lost more than £100 at one time he was not compelled to pay the sum, and the winner forfeited treble the amount.

The respect shown to the statute may be gauged by the fact that the duchess of Mazarin won 1,400 guineas in one night from Nell Gwynn at basset, and more than £8,000 from the duchess of Portsmouth, and derived no little financial advantage from doubtful play with the merry monarch. Even the more austere William III is said to have lost £2,500 to the professional gambler Richard Bourchier, who next proceeded to win £15,000 from the Elector of Bavaria, a sum immediately doubled by tossing double or quits.

As Blackstone insists, gambling "taken in any light is an offence of the most alarming nature; tending by necessary consequence to promote public idleness, theft, and debauchery among those of the lower class; and, among persons of a superior rank, it has frequently been attended with the sudden ruin and desolation of ancient and opulent families, an abandoned prostitution of every principle of honour and virtue, and too often has ended in self-murder."

The gaming laws governing the practice in Great Britain, and the legally prohibited games, ace of hearts, basset, dice (except backgammon), faro, hazard, lotteries (except those of art unions), and roulette, are dealt with under those separate headings.

The economic nature of gambling is that as the result of a bet property is transferred from one to another upon the occurrence of an event which, to the two parties to the bet, was a matter of com-

plete chance, or as nearly so as their adjustment of condition could make it. Chance is the principle upon which the transaction is founded, in the mind at least of one of the parties. Chance enters into every human transaction, but the reason is always exercised to reduce its possible effect to the minimum. Into gambling, on the contrary, reason is only introduced so to adjust the element of chance as to make it the determining principle of the transfer, and the wrongfulness of the practice lies not in the indulgence in an intrinsically innocent act, but in the surrender to chance of acts which ought to be controlled by reason alone.

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Gamboge. Gum resin of a rich brownish yellow tint, obtained from *Garcinia Hanburii*, a tree which grows in Siam, near the S.W. coast of Cambodia, whence the drug takes its name. It is imported in the form of sticks or cylinders, 1 in. to 2½ ins. in diameter and 4 ins. to 8 ins. in length, the shape being caused by the liquid juice of the tree being collected in lengths of bamboo cane. Gamboge is used in medicine as a drastic purgative, the dose being 1 gr. to 4 grs. Owing to its brilliant colour, gamboge is employed in water-colour painting.

Gamtrinus. Legendary king of Flanders, to whom is ascribed the invention of beer. In Germanic countries his name is sometimes used as a sign for beer halls and cellars, and the king is represented sitting across a barrel, holding in his hand a tankard of foaming beer.

Game. Name given to certain undomesticated animals taken in field-sports by coursing or shooting, and to their flesh when used for food. Game, as defined by the Night Poaching Act, includes hares, pheasants, partridges, black game, red grouse and bustard. Some of these are high in flavour, and it is the custom to hang them in a cool place for several days before eating, that the flesh may become tender or short. Gamekeepers are servants employed by landowners to rear and preserve game, prevent poaching, and check the depredations of vermin and birds of prey. They are subject to the duty on male servants, and their licence only extends to lands on which their employer has a right to kill game. See Game Laws.

Game Fowl. Breed of domestic fowls descended from those used in the cockpits for betting purposes. The birds used for this purpose had as their ancestors the wild jungle-fowl (*Gallus bankiva*) of India. Up to the beginning of the 19th century the English game-fowl appears to have been little altered by domestication from the wild birds, having the strong beak, single upright comb, and the very long, sharply pointed spur at the back of the leg. They were sparsely built, and their feathers pressed closely to the body. The pugnacious disposition of the cock was shared by the hen and the chickens, the young cocks crowing and fighting among themselves even before they had left their mother's care. See Cockfighting.

Game Laws. In England, the Acts which deal in a special manner with poaching and trespassing in pursuit of game; and those which impose restrictions on the killing of game, two very different matters. Game includes hares, pheasants, partridges, grouse, heath or moor game, black game, and bustards, and for some legal purposes, woodcock, snipe, quails, landrails, and rabbits.

Under the Larceny Act, 1861, it is a misdemeanor to kill or take any hare or rabbit in a warren by night, and a fineable offence (£5) to do so by day. By the various Night Poaching Acts of 1828, and other years, it is punishable unlawfully to take or destroy any game or rabbits by night in any enclosed land or road, highway, etc., adjoining; or to enter any land, enclosed or not, with gun, net, engine, or other instrument for taking or destroying game. Arrest may be effected by a licensed game-keeper. Any policeman or constable on any highway or public place may stop and search anyone whom he reasonably suspects of being in unlawful possession of game, or to see if he has a gun or other poaching instrument. A licence is required to shoot or to deal in game. See Oke's Game Laws, 5th ed., L. Mead, 1912.

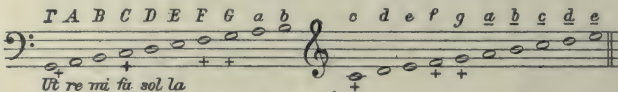
Games. Word of Teutonic origin, meaning sports or amusements. The Latin word is *ludi*, hence the phrase used in the public schools of *victor ludorum*. Both Greece and Rome had their public games, the forerunners of the athletic meetings of to-day. Among the Greeks the chief games were the Isthmian, Nemean, Olympian, and Pythian. The idea has been revived in the Olympic Games. The various games are described each under its own title in this work. See Cricket; Football, etc.; Ludi; Olympic Games.



Sairey Gamp, the loquacious nurse in Dickens's *Martin Chuzzlewit*

After Fred Barnard

Gaming. Term used mainly in law, and meaning practically the same as gambling. By the Common Law of England, a wagering contract or bet was as legal as any other. But by the Gaming Act, 1835, "All contracts or agreements



... by way of gaming or wagering shall be null and void;" and no suit is to be maintainable for recovering any money or other stake alleged to be won on a wager. This does not apply to a prize to be awarded to the winner of any lawful game, sport, pastime, or exercise. A transaction in stocks and shares or any article of commerce is a wager, if the contract between the parties is not really to be a sale and purchase, but only a payment of differences depending on the rise or fall of the market.

The Betting Act, 1853, makes it illegal to keep or use any house, office, or other place for the purpose of betting or receiving money for bets. Until the Gaming Act, 1892, a commission agent who was employed by P to bet for him, and made himself personally liable for the losses, could pay the losses, although P ordered him not to do so, and recover the amount from P. By the Act of 1892 the agent loses this right. By Acts of Anne and William IV, bills and other securities given wholly or partly in payment of gaming debts, or in payment of money lent to pay gaming debts, are to be taken as given upon an illegal consideration. See Betting.

Gammas. One of the earliest British airships built. It was a non-rigid ship of a type now obsolete.

Gammarus. Genus of amphipod crustaceans. The fresh-water shrimp, *Gammarus pulex*, common in brooks, is about half an inch in length, and feeds on dead fishes. See Amphipoda.

Gamp, SAIREY. Character in Dickens's novel *Martin Chuzzlewit*. A sick-nurse, drunken and incompetent, she is famous for her constant references in conversation to an imaginary Mrs. Harris. Her bulky umbrella has given the language the colloquial term.

Gamtoos OR **CAMTOOS.** River of the Cape Province. It rises in the Nieuwveld mts. and falls into St. Francis Bay, about 50 m. W. of Port Elizabeth, after a course of about 200 m.

Gamut. Musical scale of the Middle Ages based upon hexachords or series of six-note scales. The name comes from *gamma-ut*, the lowest note, so called from the Greek letter γ or gamma, and *ut*, the first note of the Sol-fa scale, later called *do* or *doh*. This note is still called by organ builders Gamut G. The complete gamut was:

The *ut-re-mi-fa-sol-la* series was started from each of the notes marked with an asterisk.

Gandak, GREAT. River of N.E. India. It rises in the Nepal Himalayas, and for some 30 m. forms the boundary between the United Provinces and Bihar and Orissa. It flows generally S.E., and joins the Ganges opposite Patna, after a course of about 400 m.

Gandak, LITTLE. River of N.W. India. It rises in the Nepal hills, flows parallel with the Great Gandak, and empties into the Gogra at Sunaria.

Gandamak. Village of Afghanistan. It was the scene of the massacre of the last survivors of General Elphinstone's army in 1842 in the retreat from Kabul. It is about 35 m. from Jellalabad on the road to Kabul. In 1879 an agreement made by Great Britain and Yakub Khan was known as the treaty of Gandamak.

Gandersheim. Town of Brunswick, Germany. It stands on the Gande, 36 m. S.W. of Brunswick, and is chiefly famous for its abbey or nunnery. This was founded about 850 by a duke of Saxony, one of whose daughters was its first abbess. After the Reformation the abbey passed over to the Protestants, who kept the establishment and its privileges in being until 1803. Its estates were added

to Brunswick. The abbey buildings are now used by the government of Brunswick and the palace as law courts. The church of the abbey contains the tombs of notable abbesses. Pop. 3,200.

Gandharva. Deity in Hindu mythology. The name is also given to a class of divine beings sometimes vaguely described as beautiful spirits of singing stars.

Gandhi, MOHANDAS KARAMCHAND (b. 1869). Indian Nationalist leader. Born Oct. 2, 1869, son of a native government official, he practised law in Bombay. In 1893 in S. Africa he organized an opposition to anti-Asiatic legislation by passive resistance, which resulted in the Indians' Relief Act.

On the passing of the Rowlatt Act, 1919, Gandhi launched a crusade against the British raj by means of civil disobedience, culminating in riots at Amritsar. In 1921 there was rioting and murder on an increasing scale as the sequel to Gandhi's advocacy of non-cooperation and the boycott of British goods, though he never ceased to advocate peaceful methods. Gandhi was arrested in 1922 on a charge of promoting sedition, and sentenced, March 18, to six years' imprisonment, being released Feb., 1924.

Gandhi's aim was to free India from contact with western civilization, and popular imagination invested him with the supernatural powers of a Mahatma. See India.

Gandia. Seaport of Spain, in the prov. of Valencia. It stands on the river Alcoy, 2½ m. from its small harbour, Grao, at the mouth, and 35 m. by rly. S.S.E. of Valencia. Enclosed by ancient ramparts, it possesses a Gothic church, an old college, palaces of the dukes of Borgia and of Osuna, and a Jesuit convent. There are several plazas and fine boulevards. Raisins, oranges, wine, and tomatoes are exported. Pop. 11,659.

Gando. Formerly an independent sultanate of Africa. It was situated along the E. bank of the Niger, N. of Borgu, and extended in the middle of the 19th century as far as Say. It was founded early in the 19th century, on the death of Othman Dan Fodio. After the conquest of Sokoto, the portion of the country within the boundaries of Nigeria was attached to the province of Sokoto. Gando, the city, is 50 m. S.W. of Sokoto City; pop. 12,000.

Ganesha OR HANA-PATI. In Hindu mythology, the god of wisdom, represented as a stout human figure with the head of an elephant.

Ganges. Most important river of India. It rises in two headstreams—the Bhagirathi and the Alaknanda—on the southern slopes of the Himalayas in lat. 30° 53' N. and long. 79° 8' E. The Bhagirathi issues from a glacial cavern at an alt. of over 14,000 ft., near the pilgrim town of Gangotri, takes in the Jahnvi and the Alaknanda,

a teeming waterway. It is the most sacred river of India, and special sanctity attaches to its junctions with two tributaries, with the Jumna at Allahabad and with the Gandak at Sonpur; a third famous place of pilgrimage is Sangor Island, at the mouth of the Hooghli. At these places annual bathing festivals are held, and are attended by thousands of pilgrims from all parts of India.

Among the chief towns on the river's banks are Cawnpore, Mur-



M. K. Gandhi,
Indian leader



Ganges. Map of the river basin from the rise of its headstreams to the delta in the Bay of Bengal

and from the junction of the latter stream at Devprayag the river is known as the Ganges. Penetrating the mountains and flowing in a S.W. direction, it emerges from the mountainous tract and enters the plains close to the sacred city of Hurdwar. Thenceforth it pursues a S.E. course to Allahabad.

From its source to this point the river is only a series of pools and shoals, with occasional rapids, but during the rainy season it becomes a raging torrent. At Allahabad, 670 m. from its source, it receives the waters of its largest tributary, the Jumna, and becomes a noble stream. The course of the river now trends E. and S.E. through the United Provinces and Bengal, receiving other important tributaries—the Gumti, Gogra, Son, Gandak and the Jamuna, the main stream of the Brahmaputra—to fall into the Bay of Bengal by a deltaic system of the most intricate character. The length of its course is 1,557 m. The delta begins about 280 m. from the sea, and from this point onward the course of the river through the numerous mouths is subject to extensive changes.

The Ganges is navigable as far as Garmukhtesar, 850 m. from the sea. In the upper reaches the rly. has led to a diminution of waterborne traffic, but within the presidency of Bengal the river remains

shidabad, Farrukhabad, Allahabad, Mirzapur, Benares, Ghazipur, Patna, and Monghyr, besides Calcutta on the Hooghli mouth. The principal mouths of the Ganges are the Hooghli, the most westerly, Meghna, the most easterly, Matla, Raimangal, Malancha, and Haringhata. The vast region embraced by the deltaic system is a flat alluvial tract of from 80 m. to 220 m. in breadth. The frontal region, or that part which fringes the ocean, is known as the Sundarbans, a mass of continually shifting mud banks intersected by navigable channels, and notoriously unhealthy. An immense amount of silt is carried in the water and deposited at the mouths, discoloring the sea for a distance of 50 m.

The Gangetic Canals

The Ganges forms, with its tributaries and the Gangetic system of canals, the greatest waterway communication and the largest irrigation system in India, the water-borne traffic to and from the numerous cities on its banks being prodigious. The valley is one of the most productive on the earth; it is everywhere cultivated, yielding rice, sugar, cotton, indigo, fruit, and opium.

At Benares, 740 m. up-stream, the river has a width of 1,450 ft. in the dry months, nearly doubled in the wet season. At 500 m. from

its mouth it is a mile wide. The period of flood begins in May and lasts until the end of July, the waters subsiding in Aug. and Sept. The river rises on the average 31 ft., and the country overflowed is about 100 m. in width. A tidal bore, most noticeable on the Hooghly, rushes up the river at nearly 18 m. an hour, sometimes causing an instantaneous rise of 5 ft. at Calcutta. The drainage area is estimated at 391,100 sq. m. See Allahabad; Benares, illus.

Ganges. British training ship. She forms part of the naval training establishment at Shotley (*q.v.*).

Gangi. Town of Sicily, in the prov. of Palermo. It stands on a mt. slope, at an alt. of 3,000 ft., 19 m. S.E. of Cefalu. It has been identified with the ancient Engium (*Gr. Engyon*), famed for its temple of the Great Mother of the Gods, which was despoiled by Verres. Pop. 10,394.

Gangjam. Dist. and town of India, in the N. of Madras presidency. The district (including the agency), which lies on the coastline of the Bay of Bengal, has an area of 8,380 sq. m. It is traversed by the E. Ghats, which here reach an alt. of nearly 5,000 ft. For administrative purposes Gangjam is divided into five sub-divisions, one of which, the hill area, inhabited for the most part by backward tribes, is administered as a separate agency (area, 3,484 sq. m.), by a collector acting as agent to the governor. The chief products are rice, millet, and gram. Among the industries are weaving and tanning, and there is trade in sugar and salt. Gangjam town, at one time the headquarters of the district, has declined in importance since it was superseded in 1815 by Berhampur.

Ganglion (*Gr.*, tumour under the skin). In physiology, a collection of nerve cells. Instances are the spinal ganglia on the posterior roots of the spinal nerves, and the gasserian ganglion lying deep in the temporal region of the skull.

In pathology, a cyst-like swelling which forms in connexion with a tendon sheath or joint, most frequently the tendons at the back of the wrist or the fingers. It may be treated by being struck a sharp blow which ruptures the cyst internally and leads to absorption of the contents. Perforation from the exterior should be avoided if possible, and only undertaken with strictest aseptic precautions. See Brain; Nervous System.

Gangpur. Native state of India, tributary to Orissa. Its area is 2,492 sq. m. The state is a long undulating tableland about 700 ft

above sea level, interspersed with hill ranges and isolated peaks. It is watered by the Ib, the Sankh, and the S. Koel, the last two uniting and forming the Brahmani. Gangpur was transferred from Chota Nagpur to Orissa in 1905, and the chief is now subject to the control of the political agent who is also the commissioner of the Orissa division, according to the terms of the sanad or charter granted in 1899 and renewed in 1905. The principal crops are rice, sugar-cane, and oil-seeds, while coal, limestone, and iron are worked.

Gangrene (*Gr. gangraina*) or **MORTIFICATION.** Death of a mass of tissue. The condition may be due to blocking of an artery which cuts off the supply of blood to a part (embolic gangrene); imperfect nutrition of a part in elderly people (senile gangrene); abnormal condition of the blood, as in diabetes, combined with a slight injury; chronic poisoning by ergot; Raynaud's disease (*q.v.*); injury to a limb (traumatic gangrene); infection by certain organisms (wound phagedena, hospital gangrene, gas gangrene, cancerum oris, etc.); frost-bite; and burning. Clinically, gangrene is divided into two forms: dry gangrene, in which there is little fluid in the tissues and the part becomes dry, hard, shrunken, and black; and moist gangrene, in which the part is swollen with fluid and is putrescent. The chances of arrest of the progress, and recovery to health, as well as the treatment, depend upon the cause of the condition and the recuperative powers of the patient.

Gangue (*Fr. gangue*, *Ger. Gang*). Special term used in metallurgy for the earthy, stony material, the worthless vein-stuff associated with metalliferous ores, or the matrix in which ores are usually embedded. The gangue appears in many forms, from the simple, earthy, or clayey matter of sedimentary deposits, such as those from which iron is chiefly obtained, to the hard, massive, resistant granite and quartz rock usually associated with gold. See Mining; Ore.

Ganister. Local name of a siliceous stone found in the lower coal measures of Yorkshire, particularly in the neighbourhood of Sheffield. It is a close-grained, dark-coloured, argillaceous sandstone rock, the clay being present in just about the necessary proportions to permit the stone, when ground and mixed with a little water, to be moulded into bricks. It is highly refractory and largely used for the lining of metallurgical furnaces of all kinds. See Blast Furnace; Dinas Rock; Furnace.

Ganja OR **GANJAH.** Name applied to the tops of cultivated female plants of *Cannabis sativa* or Indian hemp. The tops are cut directly after flowering and made into bundles from 2 ft. to 4 ft. long. The two varieties are Bengal and Bombay ganja, the superiority of the former being due to the care taken to eradicate the male plants from the fields where the tops are collected. Ganja is a narcotic and anodyne. See Hemp.

Gannet OR **SOLAN GOOSE** (*Sula bassana*). Group of large sea fowl, rather goose-like in form, from which they derive their popular name. About twelve species are usually recognized, and they are widely distributed throughout the world. The European gannet is common around the British coasts, and nests in vast numbers on the Bass Rock and on the cliffs in many of the wilder districts. It is almost 3 ft. in length, and

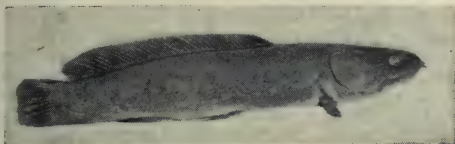


Gannet or Solan Goose, *Sula bassana*

has pure white plumage with the exception of some black feathers on the wings and a slight yellowish buff tinge on the head and neck.

The birds assemble in great multitudes in the early spring at their nesting sites, and construct a small heap of seaweed and grass on the bare rock. Only one egg is laid, and the female sits so closely that she will often allow herself to be touched rather than leave the nest. She generally sits with her face turned towards the cliff. Gannets work havoc in the herring and pilchard fisheries, and their flesh is rank.

Ganoid. Name formerly applied to one of the orders of fishes. They are characterised by the possession of cartilaginous skeletons and bright bony scales on the skin. Most of the earlier fossil fishes were of this type, and the few still existing genera include the sturgeon, American gar pike, bowfin and polypterus. The majority of them are fresh-water fish; and some, like the sturgeon, attain a large size. The ganoids were formerly regarded by zoologists as forming a separate group from the Teleostei or bony



Ganoid. The American bowfin, one of the Ganoid family

fishes, but a more complete study of the fossil forms has shown so many intermediate types that the two groups are now classed together in the sub-class Teleostomi, or end-mouthed fishes, and the term Ganoidae is practically obsolete. See Sturgeon.

Gans, EDUARD (1797-1839). German jurist. Born at Berlin March 22, 1797, he became professor of law at Berlin University in 1825. A man of wide culture and liberal views, his great work on the world development of inheritance law appeared in 1824-35, others being *The System of Roman Civil Law*, 1827, and *The Basis of Property*, 1839. He died May 5, 1839.

Gantang. Mt. pass of the Punjab, India, in Bashahr state. It leads over the Indian boundary into Tibet in lat. 31° 40' N., long. 78° 46' E., reaching an alt. of 18,295 ft. amid perpetual snow.

Gantok. Chief town of Sikkim, an Indian state in the Himalayas. It stands among the mts. 40 m. N.E. of Darjeeling. The inhabitants are allied to the Tibetans and are Buddhists.

Gantry (Lat. *cantherius*, trellis, framework). In engineering, an overhead traveller, but lighter in construction and of a lifting power usually not exceeding about 15 tons. Used for a variety of purposes, such as excavation, coal handling, and bridge erection, gantries are provided with a crab and lifting apparatus. A gantry crane is a crane mounted upon a high travelling staging under which vehicles such as railway rolling stock may pass. See Derrick.

Ganymedes or **GANYMEDE**. In Greek mythology, a Phrygian youth. He was carried off to heaven by an eagle, or by Zeus in the form of an eagle, to be the cup-bearer of

among the constellations as Aquarius or the water-carrier.

Ganz, WILHELM (1833-1914). German musician. Born at Mainz, Nov. 6, 1833, he belonged to a musical family. In 1850 he settled in London, where he became accompanist to Jenny Lind, and from 1874-82 conducted the New Philharmonic and Ganz's orchestral concerts.



Wilhelm Ganz,
German musician
Russell

He acted as accompanist to other great singers, and was professor of singing at the Guildhall School of Music. Ganz died Sept. 12, 1914.

Gaol or **JAIL**. Place of confinement for criminals and offenders generally. Hence come the words gaoler, a keeper of prisons, and gaol bird, a slang term for an habitual criminal. See Prison.

Gap. In aeronautics, the space between the upper and lower wings of a biplane or multiplane.

Gap. Town of France, capital of the dept. of Hautes-Alpes. It stands on the Luye, 48 m. S.S.E. of Grenoble. It has a modern cathedral and in the prefecture is a valuable collection of manuscripts, as well as a museum. Another building is the bishop's palace. It has some small manufactures. Gap was a Roman settlement, and in the Middle Ages was chiefly famous as the seat of a powerful bishop.

Gapes. Common disease in poultry affecting young chickens, in which it produces a heavy mortality. It is due to the presence of a worm, which is found sometimes in great numbers in the windpipe of the chicken, causing great irritation and weakness consequent upon efforts to expectorate the parasite. Actual suffocation may occur. The ground becomes infected by the

Zeus at the celestial banquets. Later, he was identified with the spirit of the sources of the Nile, and as such was placed by astronomers



Ganymedes carried off by the eagle of Zeus, as painted by Correggio
Imperial Gallery, Vienna

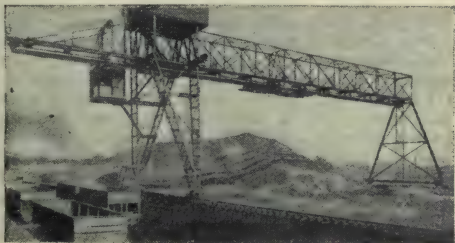
eggs of the worm being scattered in all directions. The poultry are noticed to be gaping, sneezing, running backwards, and finally to be greatly exhausted. Attention should be paid to the food and water, and then to the affected ground. The chickens should be put upon a fresh run, dressed with lime. See Poultry.

Gapon, GEORGE (c. 1870-1906). Russian labour leader. Born of a peasant family at Biliki, a village in Poltava, S. Russia, he gained his first impressions of social injustice from his father. an official of the group of communists.



George Gapon,
Russian labour leader

Trained for the priesthood, at the age of 15 he came under the influence of Tolstoi's writings. Becoming a priest, he moved to St. Petersburg. Contact with the daily life of the poor convinced him that labour organization was needed to secure improved conditions, and the St. Petersburg Factory Workers' Society, founded in April, 1904, was soon followed by similar societies.



Gantry. Brown hoisting gantry for loading, unloading, and stacking coal and other minerals

In Dec., 1904, Gapon started a propaganda movement in favour of a general strike to enforce the demands of labour, and on Jan. 15, 1905, 12,000 hands at the Putiloff works came out. The strike spread, and when an attempt was made to present a petition at the Winter Palace by an unarmed crowd Gapon was one of the leaders. He escaped the massacre at the Narva Bridge (Jan. 22), and crossed the frontier, subsequently visiting Switzerland, Paris, and London. On April 14, 1906, his dead body was discovered in a villa not far from St. Petersburg, the suggestion being that he had been assassinated by a secret revolutionary tribunal as an informer and traitor to the cause. See his *Story of my Life*, 1905.

Garabit. Town of France in the dept. of Cantal. It is 81 m. by rly. from Clermont-Ferrand, and is known on account of the remarkable viaduct by which, near here, the railway crosses the Truyère. Built in 1881-84, this is 620 yds. long and 400 ft. high, with a central span of 540 ft.

Garage (Fr. *garer*, to shelter). French word, introduced into English in the 19th century, denoting an establishment for the housing, repairing, and general upkeep of motor-vehicles. The term was used in France, before motors became general, for the safe storage of boats, rolling stock, etc., and for the place of such storage. See *Motor-Car*.

Garay, JÁÑOS (1812-53). Hungarian poet. Born at Szegszard, Oct. 10, 1812, he was educated at Pest, where he was professor of Hungarian language and literature, 1848-49. Among his works are *Arpadok*, a book of ballads, 1847; *Arboez*, 1837; and *Bathori Erzsébet*, 1840; dramas; and *Szent Laszlo*, a long poem describing the life of S. Ladislaus, 1852. He died Nov. 5, 1853.

Garay, JUAN DE (1541-84). Spanish soldier. Having settled in Paraguay, Garay attained a leading position there, and in 1573 founded the city of Santa Fé de Vera Cruz. As governor of Paraguay he conducted wars against the natives, and in 1580 founded Buenos Aires, on the site of the older settlement called Mendoza. He was killed by Indians.

Garbage. Term chiefly used for kitchen waste from the preparation of food. It is a word more frequently used in U.S.A. than elsewhere for refuse of all kinds. See *Refuse*; *Sewage*.

Garborg, ARNE (b. 1851). Norwegian author. Born Jan. 25, 1851, he was educated as a teacher, and in 1873 went to Christiania

university. There he became known as a writer and critic, his essays, mostly on religious or ethical questions, being published in *Aftenbladet*, and other papers. In 1877 he founded *Fedraheimen*, a periodical published in dialect, which he edited until 1882. His first book, *A Year of Free-thought*, 1881, aroused great interest; it had previously appeared anonymously in *Fedraheimen*. His dialect stories, *Peasant Students*, 1883; *Tales and Legends*, 1884; *Menfolk*, 1886; *At Home with Mother*, 1890; and *Weary Folk*, 1891, placed him in the front rank of Norwegian authors.

Garcia, CALIXTO (1836-98). Cuban patriot. Born at Holguin, Cuba, Oct. 14, 1836, he early took part in insurrections against Spanish rule. In 1880 he was captured, and imprisoned in Spain. In 1895 he escaped to Paris and thence to Cuba, where he at once joined in the rebellion then going on, and won several notable victories. In 1898 he commanded a body of his compatriots in the Spanish-American war, and died in Washington while on a mission to President McKinley, Dec. 11, 1898.

Garcia, MANUEL DEL PÓPOLO VICENTE (1775-1832). Spanish singer and composer. Born at



Manuel Garcia,
Spanish singer

Seville, Jan. 22, 1775, he was a chorister in the cathedral there, and soon made himself known as composer, conductor, singer, and actor. In 1808 he became the leading tenor in the Italian opera in Paris, and in 1812 in the royal chapel at Naples. After singing in London and Paris he went to New York, where, in 1825, he established himself with a company at the Park Theatre. He toured in Mexico and, returning to Europe, opened a school of singing in London, and also taught in Paris. Garcia composed many operas,

including *The Caliph of Bagdad*, 1812; and *The Death of Tasso*, 1821. He died June 2, 1832. His daughters, Mmes. Malibran and Viardot, became famous singers.

His son Manuel (1805-1906), a noted teacher of singing, for many years professor at the Royal Academy of Music, made a scientific study of the vocal organs, one result of which was his invention of the laryngoscope. He died on July 1, 1906.

Manuel's son, Gustav (b. 1837), had a successful operatic career in Europe and in England, making his début in Donizetti's *Don Sebastiano* at La Scala, in 1862. In 1880 he settled in England as a teacher, and was for some years professor at the R.A.M., and afterwards at the Royal College of Music and the Guildhall School of Music simultaneously. He retired in 1911. His son Albert also adopted a musical career as baritone singer and teacher. He made his début in 1902, and is professor at the Guildhall School of Music and the R.A.M.

Garcilaso de la Vega (1503-36). Spanish poet. A native of Toledo, he fought in the army of Charles V in Austria and Tunisia, and died at Nice from wounds received in action, Oct. 14, 1536. His poems, chiefly sonnets or elegies written on Italian models, were highly esteemed, and strongly influenced his generation. Cervantes called him "the Prince of Poets." Works, Eng. trans. with Life, J. W. Wiffen, 1823.

Garcilaso de la Vega, SEBASTIAN (1495-1559). Spanish soldier. Known generally as *Laso de la Vega y Vargas*, he went from Spain to serve under Hernando Cortes in Mexico. Later he went to Guatemala, and thence to Peru, where he settled, becoming governor of Cuzco. His son (1540-1616) wrote *Royal Commentaries* of Peru, 1609-17.

Gard. Dept. of France. In the S.E., it formed part of Languedoc. Its eastern boundary is the Rhône, and in the S. it borders the Mediterranean. Area, 2,270 sq. m. It consists of three districts, one covered by the Cévennes in the N., with beautiful mountain scenery and fruitful valleys; another called the Garrigues in the centre, where wheat, oats, vines, and olives are grown; and a marshy region in the S. Other industries are the rearing of cattle, horses, and sheep, and the culture of silkworms. Minerals include salt obtained from the marshes. Quarrying and fishing are also carried on. Nîmes is the capital; other places are Alais and Aigues-Mortes, while Le Vigan, although small, is worthy of



- Garda. Fishermen on the lake, the largest lake in Italy

mention. The Pont du Gard is a Roman aqueduct crossing the Gard, near Remoulins. The dept. takes its name from the Gard, or Gardon, a tributary of the Rhône; other rivers are the Cèze and the Hérault. Pop. 413,458.

Garda, LAGO DI (Lat. *Lacus Benacus*). Lake of Italy. It is the easternmost and largest of the Italian lakes, and lies between Lombardy and Venetia, running a few miles into Tirol. Some 34 m. long and from 3 m. to 10 m. broad, with a maximum depth of 1,900 ft., it has an area of about 180 sq. m. It is fed by the Sarca and drained by the Mincio. Mountainous on the N. and E., the shores slope gently to the S., and on the W., where the climate is favourable, figs and grapes flourish. This part, called La Riviera, is lined with charming villas. The beautiful promontory of Sermione, between Peschiera and Desenzano, has many remains of Roman and later buildings.

Gardariki. Name of a region in Russia. Situated E. of the Baltic Sea, according to the medieval migration sagas, it was colonised by Odin, who made one of his brothers king, before going to Scandinavia.

Gardelegen. Town of Germany, in Prussian Saxony. It is situated on the Milde, 25 m. W. by S. of Stendal. It came into prominence during the Great War on account of its prisoners-of-war camp. This was about 1½ m. from Gardelegen station on the rly. between Berlin and Hanover, and covered an area of about 350 by 550 yds., divided into eight compounds, each containing eight huts.

The camp became notorious by reason of an epidemic which broke out there in Feb., 1915, when it contained about 11,000 prisoners, French, Russian, Belgians, and 260 British. The nationalities were mixed up, so that 80 was the greatest number of British in one compound. The greatest callousness and cowardice was shown by the

Germans in their treatment of the prisoners. There was only one stand-pipe for 1,200 men to wash by, and the great majority of the prisoners were infected with vermin. A few prisoners, suffering from typhus, were introduced into the crowded camp.

In Feb., 1915, the Germans brought two medical officers to the camp, with a small band of French and Russian doctors, to release and save their own staff. In this month they removed all the guards and their own medical officers, leaving the prisoners to their own fate. The latter suffered from insuffi-

cient supplies of food and stores. Major P. C. T. Davy and Dr. Saint Hilaire, the senior allied medical officers, asked for drugs and milk, but the German command did nothing. Eventually some milk was obtained by paying a German non-commissioned officer a commission to induce him to purchase it at the cost of the British and French doctors. The pestilence lasted four months, and in that time there were 2,000 cases. Fortunately the disease was of a mild type, but 15 per cent. of those attacked died. This example of German brutality was laid bare in the report by the British Government committee on the treatment by the enemy of British prisoners of war, issued as a White Paper (Cd. 8,351), Oct. 24, 1916. For his devotion to duty Major Davy was awarded the C.M.G. See Prisoners of War; Wittenberg.

GARDEN AND GARDENING

H. Havart, Author of The Back Garden Beautiful

The information given herein is supplemented by the articles on the various flowers and plants grown in gardens, e.g. Dahlia; Gardenia; Flower; Lobelia; Rose; Cauliflower; Potato. See also Annuals; Greenhouse; Market Gardening

Garden comes from a Teutonic word meaning an enclosure, and is akin to the less familiar garth. Its present meaning is that of a piece of enclosed ground, wherein flowers, shrubs, fruit, and vegetables are grown. There are two main divisions of gardens, ornamental and useful, many of the latter being known as market gardens. Ornamental or flower gardens are classified according to the way in which they are laid out, e.g. in the Dutch or Italian style, or according to what flowers and shrubs they contain, e.g. a rose garden. Public places of amusement, which are ornamented with flowers and shrubs, are sometimes called gardens, e.g. the old Cremorne Gardens, in London, and there are zoological gardens and botanical gardens. Rows of houses, especially in the west of London, are sometimes known as gardens.

Gardening is the practice and development of plant cultivation which results in the production of the best and choicest forms of flowers, fruit, and vegetables. According to Strabo, the first systematic attempts at horticulture in Britain were due to the Romans. Probably, however, the so-called gardens were merely patches of ground cleared and cultivated with fruits and vegetables, in which little attempt at floriculture, or colour effect, was made.

The first park in England was made by Henry I., at Woodstock, but progress was slow, despite the fact

that there was no lack of material. A writer of the 12th century thus describes the desirable contents of a garden. "It should be adorned on this side with roses, lilies, and the marigold; on that side with parsley, cost, fennel, southernwood, coriander, sage, savary, hyssop, mint, vine, dittany, pellitory, lettuce, cresses, and the peony. Let there be beds enriched with onions, leeks, garlic, mellons, and scallions. The garden is also enriched by the cucumber, the soporiferous poppy, and the daffodil, and the acanthus. Nor let pot-herbs be wanting, as beetroot, sorrel, and mallow. It is useful also to the gardener to have anise, mustard, and wormwood. A noble garden will give you medlars, quinces, the pearmain, peaches, pears of St. Regle, pomegranates, citrons, oranges, almonds, dates, and figs." Many of the subjects are unidentifiable with the familiar flowers and fruits known by their name to-day.

Until the 16th century, most of the practical horticulture of Britain was in the hands of the monks, who were chiefly concerned with the culture of fruit and vegetables for the table, and of medicinal herbs, rather than of flowers. In 1510 the earl of Northumberland, in an establishment of over 150 persons, boasted only one gardener, who was paid by the hour. Gardening made rapid strides in the latter half of the 16th century, and the

Tudor gardens of that period, blended with the Dutch introduction of a century later, form, perhaps, the basis of modern horticulture. The Dutch, or formal, style of garden was much in evidence until the mid-Victorian era, when William Robinson and other practical gardeners started a vigorous campaign in favour of a less restrained and more natural arrangement of trees, shrubs, and flowers. The ultimate result has been a modification in the art of garden planning. To-day the best-arranged gardens have formal beds and borders near the house, and gradually fade away into irregularity as they mingle with the landscape.

COMPONENT PARTS OF A GARDEN.

According to modern usage the complete garden should include an exotic house, a temperate house, and a cool greenhouse. In addition, there should be one or two houses for the cultivation of such things as grapes and tomatoes, supplemented by a number of cold frames. The outdoor arrangements should provide for a tennis lawn or bowling green, formal beds and borders near the house, rock garden, wild garden, water garden, kitchen garden, and shrubbery. Of gardens within gardens the rose garden is the most popular form, but the vast range of possibilities is shown by the late Leopold de Rothschild's Japanese garden at Gunnersbury House, in which all the inhabitants are Japanese plants, and Memory's garden, where each flower is said to have been planted for the countess of Warwick by a personal friend. In the garden of what was The Rookery, now an addition to Streatham Common, London, is a white garden, where every blossom is of that colour. The Golders Green extension to Hampstead Heath, the residence of the late Sir Spencer Wells, has a Shakespearean garden, every inhabitant of which is mentioned in the works of the poet.

The Villa Garden

In gardens of moderate dimensions, and with a view to the most economical employment of the ground, the water garden, the wild garden, the tropical house, and the rock garden may be dispensed with, in the order named, the result being what is technically known as a villa garden. When planning gardens of still more modest dimensions, the lawn as a playground disappears, and its surface is cut up and studded with flower beds, the shrubbery is dispersed, and shrubs grown only as specimens. As far as glass is concerned, one heated house, sup-

plemented by cold frames, must do all that is necessary. Speaking generally, it is more profitable to grow vegetables than fruit in a small garden. The small back garden of the suburban house gives the best results if devoted entirely to the culture of flowers, unless it is over 50 ft. or 60 ft. in length, when a small part may be used for easily grown vegetable crops.

The Ideal Aspect

Many otherwise good houses have bad gardens for the reason that the builders have indifferent ideas, or none, concerning horticulture. The nature of the ground and the direction of the prevailing winds have to be taken into consideration, but the ideal site for a garden is one which slopes gently in a S. or S.W. direction. The pleasure space should be relegated to the E., or the least favourable position. Such games as tennis, bowls, and croquet are played only in the summer months, and it is a waste of space to place a pleasure lawn in a favoured position. Dean Hole says that, supposing the front of the house to have a S. aspect, he would place his garden for the general cultivation of trees, shrubs, and flowers on the E. side, and arrange upon the W. side the smaller gardens for special collections of distinct varieties, such as the rose garden, the rock garden, the water garden, and the fernery.

THE FORMAL GARDEN. This is a combination of the old Dutch system of gardening with the early and mid-Victorian fashion of carpet bedding. It is usually nearest to the house, and is planned more or less geometrically. Where it is found necessary to terrace the land, the formal bedding is usually installed upon that terrace. It is a great mistake, however, to construct a terrace merely for the sake of having a formal garden, as such a plan necessitates the employment of a considerable quantity of brick or stone, neither of which is needed in a garden of living plants, except in the rock garden. Except for an occasional stone or rustic wooden seat or sundial, the fewer manufactured articles in a garden the better. By judicious management, formal beds will present a blaze of colour and beauty for about nine months out of the twelve. The earliest effects are afforded by the crocus and snow-drop, from Feb. onwards. These are followed by narcissi and daffodils, wall-flowers, forget-me-nots, and other subjects, including the early tulips. Afterwards, later tulips and iris give way to summer bedding plants, to be followed by asters, dahlias, and open-air chrysanthe-

mums, until the frosts render the existence of anything but dwarf evergreens impossible. It is difficult, except at a wasteful expenditure of plant life, to keep all the beds in a formal garden at the zenith of attractiveness from early spring until late autumn. Where, however, plenty of glasshouses and cold frames are available, and expense is a secondary consideration, it may be done.

THE ROCK GARDEN.

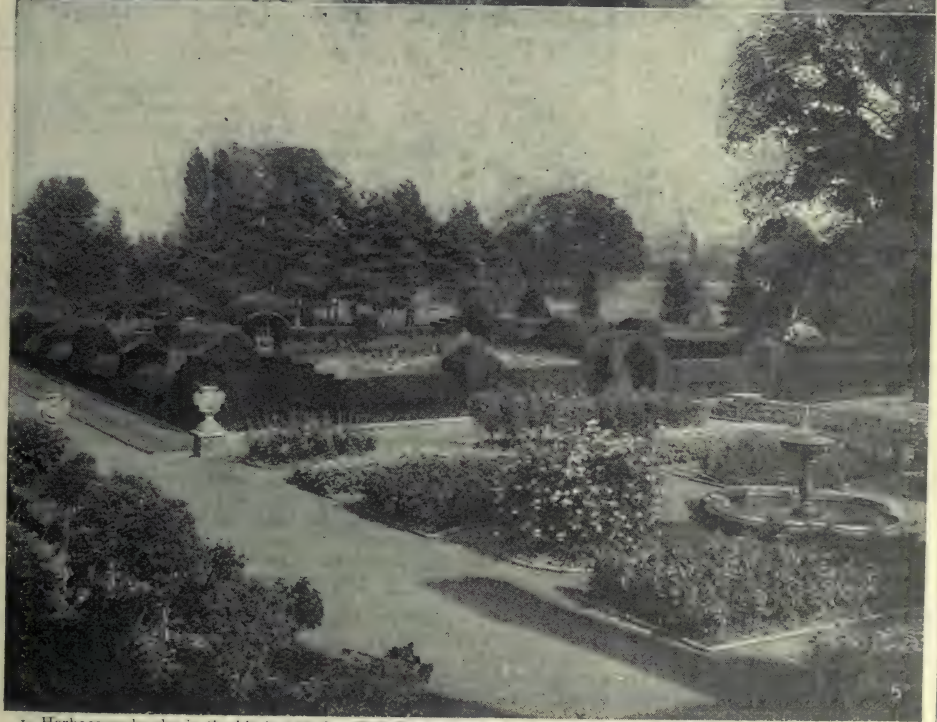
The primary use of a rock garden is for the establishment and collection of plants from the Alpine and other mountainous districts of the world. Rock gardening used to be one of the most abused forms of horticulture, the real reason for its existence being either ignored or misunderstood. Rock plants, in natural conditions, flourish upon sunny hillsides, though, at the same time, they are moisture-loving subjects. The rocks or stones, between whose crevices they grow, help to protect the soil underneath from the rays of the sun, and therefore conserve the necessary moisture for the nourishment of the plants. Hence, in order to make a good rock garden, it is necessary that the stones or rocks should, for the most part, be placed horizontally upon the ground, or, at all events, at such an angle as will afford the maximum amount of shade to the Alpine plants. Vulgar fashion has attempted to make an attractive display of the rocks or stones, giving a result like a Liliputian cemetery or a miniature Stonehenge, entirely ignoring the welfare of its living inhabitants. It is the arrangement of the plants, and not of the stones, that makes a good rock garden.

THE WATER GARDEN. This popular feature in large gardens is one which can be most easily dispensed with.

Essentials of the Water Garden

The situation of the water garden is naturally at the lowest level of the garden, where it automatically receives the drainage from the other parts of the place. The secret of success is so to arrange things that the flow of water is as gentle as possible. Most water flowers, including lilies, nuphars and the like, thrive best in water which, although not stagnant, possesses only a gentle motion. Therefore, where a good collection of water plants is desired, artificial waterfalls and fountains must be avoided.

THE WILD GARDEN. The theory of the wild garden is to place perfectly hardy exotic plants in situations where they will take care of themselves. Actually the wild



1. Herbaceous border in the kitchen garden, Balls Park, Hertford. 2. Formal variegated flower-beds at Althorp Park, Northamptonshire. 3. Sunk garden with paved walk and fountain, Hanover Lodge, Regent's Park, London. 4. Rock garden with water pools, Friar Park, Henley. 5. Flower garden with clipped hedge enclosure, Aldenham House, Herts.

GARDEN: DOMESTIC AND LANDSCAPE STYLES OF BRITISH GARDENS

garden is the coupling area between cultivated garden and woodland or park. Its aim is to furnish a connecting link between nature and culture, and it is seldom a success. The wild garden had its vogue at the end of the 19th century, and although it still exists in many country seats of considerable dimensions, and is very beautiful if properly arranged, it too often serves as an excuse for idleness and untidiness.

THE KITCHEN GARDEN. This is that portion of the garden devoted to the culture of fruit and vegetables. It should, if possible, have a S. or W. aspect, but where this is not possible protection from N. winds should be furnished by a wall or fence. Excellent fruit has been grown in unfavourable situations by the erection of a wall fashioned in the shape of a horse-shoe, with its convex directed N.E.

Area Required

To make the kitchen garden a commercial proposition it should be apportioned at the rate of one acre of ground for every four persons, taking the cost of labour as normal. A kitchen garden should always be walled or fenced. The dividing hedge between the kitchen garden and the flower garden has no justification except from a picturesque point of view. It robs the soil of much nourishment, and, at the same time, displaces a wall or fence which would afford shelter to a considerable number of fruit trees. In kitchen gardens fruit trees, when established either as standards, bushes, or espaliers, are left undisturbed, but vegetable crops on each particular plot of land should be varied year by year.

Before planting any part of a garden, it is necessary that the combination of colour and the variations of height which will result from the plants established should be considered from every point of view. It is wise to map out on paper a scheme of colour beforehand. In any case results must not be expected until at least six months have passed, except in the case of annuals.

DRIVES AND PATHS. In all gardens of considerable dimensions a carriage drive of generous width is necessary. Apart from this, superfluous paths and drives are a mistake. Before definitely laying out a garden it is wise to study a surveyor's plan of it, and draw pencil lines between those points which it is thought desirable to connect. A straight path is always the best path, and though, owing to inequalities in the ground, and for other reasons, some deviations will be found necessary in most cases,

serpentine paths for ornamental purposes only are not merely old-fashioned, but also waste a considerable area which might be devoted to cultivation. The best material of which to construct drives and paths is gravel, well rolled and weeded.

Asphalt is unsightly and unnecessary in private gardens, though the heavy traffic in public parks sometimes necessitates its use. Much of the labour formerly expended in weeding gravel paths can be obviated by the judicious use of a chemical weed-killer. Grass walks, which are really the natural setting for flower beds, are excellent in fine weather, but, unless perfectly drained, possess disadvantages during and after rains, particularly in heavy soils. Walks composed of sandstone, broken into irregular pieces, and arranged horizontally upon the ground, with mosses and creeping plants between the crevices, are charming and attractive when established. The material, however, is not always easily procurable.

TREES AND SHRUBS. In large gardens trees and shrubs may be planted freely, as specimens, or in small groups. In many villa and suburban gardens, however, tree planting is carried to excess, owing to want of thought. A man who plants a tree never lives to witness the full result of his handiwork, and, where a sapling may fit into the garden scheme, or landscape, with propriety, the full-grown tree of half a century later will quite possibly be an eyesore or even a positive danger.

Tree Planting

A healthy tree takes much nourishment from the soil, with the result either that such nourishment has to be replaced by manures and fertilisers, at considerable expense, or that the other inhabitants of the garden are starved. Moreover, large trees in small gardens divert much sun, air, and moisture which would otherwise be showered upon the other plants alike; while a large tree close to a house is often a positive danger and a menace to health. All tree planting in gardens should, therefore, be carried out with the utmost discrimination, and with an eye to future generations. The same remarks apply, to a lesser extent, to shrubs. The difficulty is more easily removable in this case, as shrubs do not attain to a menacing height, establish themselves far more quickly, and, when planted in groups or masses, can be thinned as soon as they begin to threaten the welfare of their neighbours.

GARDENING UNDER GLASS. Glass-houses are of three different shapes. The lean-to, the simplest form, merely leans against a high wall, and, as a consequence, its inhabitants can only enjoy the advantages of the full rays of the sun for a portion of the day, no matter in what aspect it may be situated. Commercially it is the cheapest form of glasshouse, and, for this reason, is the most common. The three-quarter span house depends upon a wall for one of its sides, but has a short, sloping span projecting some distance from it, and affording the benefits of sunshine to the plants within for a longer period of the day than the lean-to. The most useful but the most costly form of glasshouse is the span, which stands in the open ground without the aid or protection of any wall. A span-roofed glasshouse placed with its ridge pointing N. and S. will enjoy the sun's rays for the whole of the day.

Cleanliness and Pests

Strict cleanliness is necessary in glasshouses, especially where the plants are grown in pots, and not in beds or borders within the house itself. These pots should be periodically scrubbed and the shelves washed over once a fortnight, particular attention being paid to cracks and crevices likely to harbour insect pests. These pests can be eradicated by means of various insecticides (*q.v.*), but it is far better to prevent them from obtaining a footing in a glasshouse. With the same end in view, the interior of a house should be painted annually with white paint, preferably during June or July, when the usefulness of the structure is at its minimum.

THE HERB GARDEN. Until the outbreak of the Great War few herbs were grown, except mint and parsley, in Great Britain, the supply coming chiefly from abroad. It is necessary to grow herbs in quantity, on a market-gardening scale, in order to secure a profitable crop, but a writer in *The Daily Mail* enumerates the following varieties, the majority of which can be grown easily: Some medicinal herbs are wanted entire, others only yield medicine in their leaves, roots, or flowers. Among the stalked plants we put the sweet and aromatic herbs, garden mint, balm and marjoram, tansy, agrimony, sweet woodruff, cleavers, meadow-sweet, yarrow, pink centaury, and feverfew; also the leaves of foxglove, elder, raspberry, comfrey, and buckbean. The petals of red roses and garden marigolds, and the flowers of lime, yellow mullein, marshmallow, and camo-

mile can be safely collected, as also the seeds of the meadow saffron or autumn flowering crocus.

GARDENING AS A PROFESSION. No industry requiring wide knowledge offers fewer prizes than that of horticulture. Practical gardening is the study of a lifetime. The lad who wishes to become a gardener will be compelled to start at the age of fourteen years to pull up weeds, push the lawn mower, and make himself generally useful. The successive stages in his career will be those of improver, journeyman, foreman, and head, when his responsibilities may include the disposal of the services of thirty or forty men and boys.

In many establishments the head gardener is permitted to supplement his income by competing for prizes at local horticultural exhibitions and flower shows. This is a concession of doubtful advantage from the employer's point of view, inasmuch as there is a natural tendency on the part of the gardener to concentrate his attention upon the comparatively small number of plants from which he hopes to derive personal benefit, and to neglect the general routine work of the garden. Before a gardener settles down into what he hopes will be a permanent position, he will be well advised to have held situations, and gained experience in different parts of the country. Though the general rules of horticulture apply throughout the greater area of the kingdom, conditions in extreme latitudes as, for example, the N. of Scotland and the S. of Devon, require special knowledge and treatment.

GARDEN LITERATURE. The number of gardening books produced annually is enormous, but few remain standard works of reference for many years, for the know-

ledge of horticulture increases from year to year. One old classic, which is still quoted when experts differ, is: "Paradisus in Sole Paradisus Terrestris. A garden of all sorts of pleasant flowers which our English ayre will permit to be noursed up: with a kitchen garden of all manner of herbes, rootes, and frutes, for meate or sauce used with us, and an orchard of all sorte of fruitbearing trees and shrubbes fit for our land, together with the rightordering, planting, and preserving of them and their uses and vertues, collected by John Parkinson, apothecary of London, 1629." This work was reprinted in 1904.

Practical Knowledge Essential

No theoretical help from books is as good as practical knowledge, supplemented by the occasional courses of lectures arranged from time to time by the various authorities controlled by county councils and horticultural institutions. Many of these institutions also possess useful libraries. The leading nurserymen of the United Kingdom issue annually to customers elaborate illustrated catalogues which are mines of information, although, naturally, such information is prepared with a bias towards the particular varieties in which the firm specialise.

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GARDEN CITIES AND THEIR PROGRESS

C. B. Purdom, *Garden Cities and Town Planning Association*

Town planning is complementary to the above article. See also Hampstead Garden Suburb; Letchworth, etc.; also Architecture; Building; Commons; Howard, Ebenezer; etc.

The garden city movement is concerned with the improvement of housing conditions and the proper planning of towns. Its specific aim is the development of new industrial towns in rural districts, as a means of restoring a balance between town and country. The concentration of population in great towns, and the depopulation of rural districts is characteristic of all countries in which mechanical industry has been developed.

In England in 1851, when the development of industry in England was far advanced, about half the

population lived in the country and half in the towns; between that date and 1911 the population of the towns increased from 9 to over 28 millions, while the rural population declined by more than a million. Industry depends upon a certain concentration of population; but in England, as elsewhere, the process has gone too far; the great towns have outgrown their efficiency, and the congeries of towns in the neighbourhood of London, Manchester, and Glasgow, for example, present almost insoluble problems of local

government, traffic, poverty, and public health.

The garden city movement is the first serious attempt to divert the stream of population. It owes its origin to Ebenezer Howard's book *To-morrow: a Peaceful Path to Social Reform*, published in 1898. The essence of the idea was the acquisition of large tracts of land on which towns could be planned with full industrial facilities, in order that manufacturers might establish themselves and their workpeople under healthy and economical conditions. That it was practicable to establish mechanical industries in rural surroundings had been shown many times in the course of the century, the most notable example being Bournville. But Howard maintained that the best results could only be got by a combination of manufacturers in a scheme large enough to possess the qualities of a real town.

The Rural Belt

There were two other important elements in the scheme; one was that the land values created by the new community should be employed for communal purposes, meeting municipal expenditure normally paid out of rates; the other was the formation of closer relations between urban and rural life by the retention of a wide belt of agricultural land as part of the garden city scheme, the town not being allowed to extend beyond a certain maximum; further growth was to take the form of a new urban nucleus beyond this agricultural belt. In this way agriculture was to be in permanent association with the social life, business facilities, and mechanical equipment of the town. In a national system of garden city development urban centres would be distributed evenly throughout the country to the great advantage of agriculture, and with far-reaching effects upon food production and the increase of the agricultural population.

The first attempt to build a garden city was made in 1904 when Letchworth Garden City was established. Six square miles of land in a purely agricultural district in Hertfordshire, 35 m. from London, was bought by First Garden City, Ltd., a joint stock company. On this land a town of 35,000 inhabitants was planned, with industries, houses, shops, public buildings, etc., occupying about two square miles, with a permanent agricultural belt round it. The population is now (1920) 12,000, with about 40 factories. The features of the garden city as exemplified at Letchworth are that the workers have good houses,

with adequate sunlight and air-space, gardens, and allotments; the factories are within walking distance; health is improved, the infant mortality rate being 30 per 1,000 births in 1918, and 36 in 1917; there are good shops and schools; an active social and civic life; and the open country is ten minutes walk from the centre of the town. The industrial features are sufficient space in a specially planned factory area, with sidings, roads, power, etc.; great reduction of loss of time among workmen, and healthy buildings.

Development of the Scheme

The good workmen's housing carried out at Letchworth on a basis that showed a fair return upon capital, and the economies effected in estate development were recognized as great advances, though often criticised in detail. The result was a powerful impetus to efforts to improve housing conditions throughout the country. The garden city type of land development became widely imitated and a large number of schemes were started which were incorrectly described as garden cities.

Public attention was also directed to the absence of town planning legislation in Great Britain, and as a consequence the Town Planning Act of 1909 was passed, giving local authority powers over the development of land. Methods of house and site planning are, however, merely incidental to the garden city movement, while the growth of suburbs and the planning of large housing estates on the outskirts of great towns is contrary to the essential principles of this movement.

In view of the frequent misuse of the term garden city, the Garden Cities and Town Planning Association, founded 1899, has adopted a definition to which all schemes that claim the name should be made to conform.

A garden city is a town designed for healthy living and industry; of a size that makes possible a full measure of social life, but not larger; surrounded by a rural belt; the whole of the land being in public ownership, or held in trust for the community.

The development of the garden city movement is now in the direction of satellite towns around the great cities. The pressure of population upon all the great urban areas, and the existence of great tracts of slums within them, has led to the suggestion of the creation of new towns at distances of from ten to thirty miles of the existing areas, to which factories could be removed and new indus-

tries established. These new towns, planned as garden cities, with wide belts of agricultural land surrounding them, would accommodate large residential populations. They would draw off the surplus populations of the existing overcrowded areas, and provide for industry in a way not possible elsewhere. The problem of daily transport of workers from home to work would be solved, for the residents in the satellite towns would, for the most part, be within walking distance of their work, with a consequent great saving of time and money. This proposal was commended by the select committee of the House of Commons upon metropolitan traffic (1919). The Chamberlain committee on unhealthy areas, in its report (April, 1920) also made the formation of satellite towns its main recommendation, urging that prompt attention should be given to the development of self-contained garden cities as a first step towards solving the slum problem.

Expansion of London

Welwyn Garden City, first of the satellite towns, on the G.N. Rly. main line, 21 m. from London, was begun in May, 1920, its object being to deal with the expansion of the industries and population of Greater London. On an area of about four square miles, secured from the marquess of Salisbury and Lord Desborough, the Welwyn Garden City, Ltd., has planned a town of 50,000 inhabitants, with provision for houses of all classes, factories, public buildings, etc. The estate consists of fine, well-wooded country, with first-class rly. and road facilities.

The application of the garden city principle to the reconstruction of existing towns is recognized as an important part of the movement. Small towns upon sites that are suitable for development could become the nuclei of garden cities, preserving their natural features and agricultural belts around them under the provisions of town-planning schemes. The problem of the great cities is more complex; but there is need for restricting industry to specific areas, and for the suspension of the old form of suburban development. The main effect of the garden city movement upon town planning is the insistence upon a limitation of town areas on civic and economic grounds, and the development of the idea of the functional planning of towns.

There are garden city associations in France, Germany, Austria, Poland, and Spain. Hellerau, near Dresden, begun in 1908, is the nearest approximation to a garden city outside England. The princi-

ples of housing and estate development recognized by the movement are, however, gradually being adopted in every civilized country. In Germany, for example, the movement has had considerable effect upon public opinion in relation to the tenement dwelling, which is a feature of German urban life; the advantage of the single family type of house is now becoming generally recognized.

Throughout the British Empire the garden city movement has a growing influence, particularly in Canada, Australia, New Zealand, and South Africa. The International Garden Cities and Town Planning Association, founded in 1914, has members and adherents in every country. Its conferences have been held in Paris (1914), Brussels (1919), London (1920). See N.V.

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Garden City. Village of New York, U.S.A., in Nassau co. Situated 20 m. E. of New York, and served by the Long Island rly., it is a model village designed by A. T. Stewart. It contains the Cathedral of the Incarnation, founded by his wife, and noted for its magnificent organ, and is the see of a Protestant Episcopal bishop. Pop. 1,200.

Gardeners' Company. London city company. Incorporated by letters patent in 1605, and by charter in 1616, its motto is By the Sweat of Thy Browes shalt Thou Eat Thy Bread. Offices, 6, Essex Court, Temple, E.C. See History of the Gardeners, C. Welch, 1900.

Gardenia. Genus of evergreen trees and shrubs. Of the natural order Rubiaceae, they are natives of tropical Asia and S. Africa. They have opposite leaves, and sweet-scented, white funnel-shaped or salver-shaped flowers. The so-called Cape Jessamine (*G. florida*) is really a native of China.

Garde Républicaine. Force organized by decrees of July 5, 1848, and Feb. 1, 1849, as an integral portion of the national gendarmerie for police duty in Paris. Officially styled the Légion de la Garde Républicaine, it is a military organization of approximately 3,000 men, in 12 companies of infantry and 4 squadrons of cavalry, under the control of a colonel or commandant, and placed as a supplementary guard at the disposal of the Prefect of Police. The members of the force, all ex-soldiers,



1 and 2. Residential roads in New Earswick, the Rowntree village near York. 3. Norton Way South, a Letchworth thoroughfare. 4 and 5. Factories in Letchworth. 6. A road in Bournville. 7. The shopping centre of Letchworth. 8. A corner in Hampstead Garden Suburb

GARDEN CITY: TRIUMPHS OF MODERN TOWN PLANNING IN BRITAIN

By courtesy of The Garden Cities and Town Planning Assoc.

wear a striking uniform and are armed with long swords. Under the direct control of the prefect, the legion guards the public buildings and offices, controls the traffic at certain points, and handles the crowds on holiday occasions, while always acting as a reserve force which can be brought to the relief of the regular police in emergency.

Gardiner, ALFRED GEORGE (b. 1865). British journalist. Born at Chelmsford, he joined the staff of



The Essex County Chronicle, was associated for 15 years with The Northern Daily Telegraph, Blackburn, and was editor of The Daily News, 1902-19. President of the Institute of Journalists, 1915-16, he has

written several books of character sketches, including *Prophets, Priests and Kings*, 1908; *Pillars of Society*, 1913; *The War Lords*, 1915; and three volumes of essays, *Pebbles on the Shore*, 1917; *Leaves in the Wind*, 1918; *Windfalls*, 1920.

Gardiner, SAMUEL RAWSON (1829-1902). British historian. Born at Ropley, Hants, March 4,



Samuel R. Gardiner,
British historian
Elliott & Fry

1829, he was educated at Winchester and Christ Church, Oxford. Beyond a professorship at King's College, London, he held no tutorial positions, and almost without interruption his life was given up to historical studies. The period to which he devoted himself was that of the Civil War and the Commonwealth, on which he was the supreme authority.

In ten volumes Gardiner wrote the *History of England from the Accession of James I to the outbreak of Civil War, 1603-65*; in three others he narrated the *History of the Great Civil War, 1642-49*; and wrote three volumes on the *History of the Commonwealth and Protectorate, 1649-1660*; but did not live to complete the fourth. He collected and edited *Constitutional Documents of the Puritan Revolution*, 1889; wrote *What Gunpowder Plot Was*, 1897; *Oliver Cromwell*, 1899; *A Student's History of England, 1890-*

91, new ed. taking the work down to 1910. In 1894 he declined an appointment as professor of history at Oxford, and died at Sevenoaks, Feb. 14, 1902.

Gardiner's work is marked by extreme accuracy and fairness, but it has the defects of its qualities and lacks the charm and emotion of Macaulay and Froude.

Gardiner, STEPHEN (c. 1493-1555). English prelate and statesman. Son of a Bury St. Edmunds



Stephen Gardiner,
English prelate

cloth worker, he was educated at Trinity Hall, Cambridge, of which he was elected master in 1525. In 1528 he was sent by Henry VIII to Rome to conduct negotiations for his divorce from Catherine of Aragon, in 1529 became secretary of state, in 1531 was appointed bishop of Winchester, and in 1540 was elected chancellor of Cambridge University. Under Edward VI he spent over five years in prison for his opposition to doctrinal changes and was deprived of his see, but on Mary's accession he was restored and made lord chancellor. His actual responsibility in the persecution of Protestants in Mary's reign is uncertain. He died in London, Nov. 12, 1555, and was buried in Winchester Cathedral. See *Typical English Churchmen*, ed. W. E. Collins, Series ii, 1909.

Gardner, ERNEST ARTHUR (b. 1862). British archaeologist. Born in London, younger brother of Percy Gardner, he was educated at the City of London School and Caius College, Cambridge. After excavating at Naucratis, Egypt, 1885-86, he was director of the British school at Athens, 1887-95, conducting excavations at Paphos, Megalopolis, and other sites. Appointed Yates professor of archaeology, University College, London, he was public orator to the university, 1910-15. He served at Salonica, 1915-17. Among many publications are his *Ancient Athens, 1902*; *Six Great Sculptors, 1910*; *Religion and Art in Ancient Greece, 1910*; *A Handbook of Greek Sculpture, 1896-97*, rev. ed. 1915. See portrait in Introduction.

Gardner, PERCY (b. 1846). British archaeologist. Born at Hackney, Nov. 24, 1846, he was educated at the City of London School and Christ's College, Cambridge. Entering the British Museum in 1871, he produced several coin catalogues. In 1880 he became

Disney professor of archaeology at Cambridge, and in 1887 professor of classical archaeology at Oxford.



Percy Gardner,
British archaeologist
Elliott & Fry

He edited the *Journal of Hellenic Studies*, 1880-96. His many works include *Types of Greek Coins*, 1883; *Manual of Greek Antiquities*, 2nd ed. 1898; *Grammar of Greek Art*, 1905; and *Principles of Greek Art*, 1914. Another of his interests is exemplified by his Jowett lectures, *Historic View of the New Testament*, 1901; and *Religious Experience of St. Paul*, 1911.

Gardone Riviera. Name of a series of eight villages of N. Italy. On the W. shore of Lago di Garda, 2 m. N.E. of Salò, they form a winter resort for consumptives and a spring and autumn one for invalids. Pop. 2,230.

Gare Fowl. Common alternative name for the great auk. It is the anglicised form of the Icelandic geirfugl. See *Great Auk*.

Gareloch. Arm of the Firth of Clyde, Dumbartonshire, Scotland. It runs in a N.W. direction from Helensburgh to Garelochhead, being about 7 m. long and one wide. There is good anchorage herein, and around it are pleasure resorts, among them Garelochhead, Roseneath, and Shandon.

Garfield. Borough of New Jersey, U.S.A., in Bergen co. Situated on the Passaic river, 10 m. N.W. of New York, it is served by the Erie rly. The manufactures include woolen and knitted goods, embroidery, chemicals, and cigars. Garfield was incorporated in 1898. Pop. 13,070.

Garfield, JAMES ABRAM (1831-81). American statesman. Born at Orange, Ohio, Nov. 19, 1831, in humble circumstances, and soon left fatherless, he worked as a labourer as soon as he was old enough. A desire for education seized him, and about 1849 he managed to enter a college at Chester, Ohio. He studied there and elsewhere for about six years, and in 1856 was made lecturer at Hiram College. In 1857 he was chosen its president and in 1861 he became a barrister. During the Civil War he commanded an infantry brigade at Shiloh and elsewhere, and, as chief of the staff to Rosecrans, distinguished himself at the battle of Chickamauga.

A Republican in politics, he began his active political career in 1856. State senator of Ohio, 1859, he was elected to the House of

Representatives at Washington in 1863. He assisted Lincoln in the last difficult days of the Civil War, and was prominent during the next 18 years, being chairman of the military committee, and a frequent speaker on financial and other matters. He was three times candidate for the office of speaker, and in 1880 was nominated by the Republicans for president, being elected against W. S. Hancock.

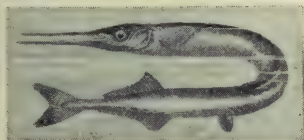


Julia Garfield

During his brief term of office Garfield showed want of tact in dealing with political opponents, and by selecting his Cabinet almost entirely from his own section of the Republican party, incurred the hostility of the "stalwarts," or supporters of Grant, led by Roscoe Conkling, who resigned their places in the Senate. He was shot at Washington railway station, July 2, 1881, but survived until Sept. 19, when he died at Elberon, New Jersey. His assassin, who was hanged, was Charles J. Guiteau, a Chicago lawyer of French Canadian extraction, who had asked for, but failed to obtain, the American consulship at Marseilles.

Bibliography. Life, Speeches, and Public Services, R. H. Conwell, 1881; Works, ed. B. A. Hinsdale, 2 vols., 1882-83; Garfield's Place in History, H. C. Pedder, 1882; Reminiscences of J. A. Garfield, C. E. Fuller, 1887; From Log-Cabin to White House, W. M. Thayer, reprinted 1914.

Gar-fish (*Belone*). Group of fishes of long and slender form. They have the jaws produced to form a sword-like beak, and bones of a green colour. They are marine in habit,



Gar-fish. Specimen of *Belone vulgaris*

and include about fifty species, of which one is quite common around the British coasts.

Garganey (*Querquedula ciria*). Species of wild duck similar to the teal (*q.v.*). It is found in most parts of Europe and Asia during the summer, and in winter around the Mediterranean and in Southern Asia. An extremely rapid flyer, it visits Great Britain in the spring, and nests in dense clumps of rushes.

Gargano (anc. *Garganus Mons*). Mountainous peninsula of S.E. Italy, in the prov. of Foggia. Jutting out some 30 m. into the Adriatic, it rises, in Monte Calvo, to an alt. of 3,464 ft.

Gargantua. Central figure of Rabelais's *Les horribles faictz et prouesses espouventables de Pantagruel*, published under the pseudonym Alcofribas in 1535. Gargantua, father of Pantagruel, is a huge giant with a vast capacity for eating and drinking. From his name is derived the adjective gargantuan to denote anything prodigiously large. See Rabelais.

Gargles or **GARGARISMA**. Fluid preparations used in medicine for gargling the throat by taking a mouthful of the liquid, throwing the head back, and gently breathing air through it. They are employed chiefly in conditions of catarrh and slight inflammation of

Garhmuktesar. Town of the United Provinces, India, in the Hapur subdivision of Meerut dist. It contains the great temple of Mukteswara Mahadeo, from which its name is derived, and is one of the chief resorts of pilgrims. There is also a mosque built in 1283, and an ancient fort.

Garhwal. District of the United Provinces, India, in the Kumaun div. Its area is 4,180 sq. m. It extends across the Himalayas, and is chiefly a mountainous region. The cultivated area is small, and is principally devoted to rice, wheat, and other grain crops. The chief trade is with Tibet. Exports consist of grain, cloth, ghi, and chillies, and imports salt, wool, sheep, and goats. The district contains a number of shrines held sacred by the Hindus, among them the temples of Badrinath, Kedar-nath, and Pandukeshwar, and is



Gargoyle. Examples in church architecture. 1. At S. Alkmunds, Derby, c. 1450. 2. Horsley, Derbyshire, c. 1450. 3. Stony Stratford, Buckinghamshire, c. 1450. 4. Tower of Notre Dame, Paris, Gothic style

the throat. Gargle is from Fr. *gargouiller*, to gargle; *gargarisma* is a Latin word meaning a gargle, Fr. *gargarisme*.

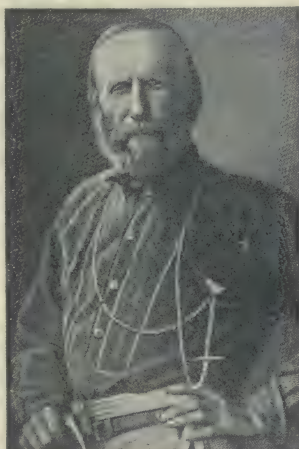
Gargoyle (Fr. *gargouille*, throat). Projecting spout attached to the gutter of a roof for shooting rain-water clear of the walls. In Gothic architecture it was made of stone fashioned into a grotesque animal or human face. The term can be used of an ordinary lead trough or rain-water head. See Architecture.

the centre of a great pilgrim traffic. Pop. 300,819.

Garhwal, TEHRI or TEHRI-GARHWAL. State of India, adjoining Garhwal district, United Provinces. Its area is 4,180 sq. m. The state is in the Himalayas, and the cultivated area is very small. Tehri, the capital, is the chief commercial centre. Pop. 300,819.

Garibaldi, GIUSEPPE (1807-82). Italian patriot. A fisherman's son, he was born at Nice, July 4, 1807. In 1834 he flung himself ardently

into the Young Italy movement, initiated by Mazzini, joined in an insurrection, and barely escaped from the country with his life. From 1836-48 he was in S. America, where he won high reputation as a leader both on land and on sea, fighting for the Montevideans against Rosas, the dictator of Buenos Aires. In 1848, when oppressed peoples were everywhere rising against their rulers, he returned to Italy, raised troops of volunteers, whom he inspired with his own heroic courage and passionate love of liberty, and performed brilliant feats of arms. But the insurrection collapsed, and in 1849 he took refuge in New York. In 1854 he again returned, settling in Caprera under the Sardinian government.



Garibaldi

From a photo about 1860

On the outbreak of the war in 1859 between Austria and Sardinia (i.e. Victor Emmanuel), supported by Napoleon III, he rendered brilliant service to the Italian cause. But when Napoleon, after the victory of Solferino (June 24), imposed upon his ally and his antagonist the peace of Villafranca, and Nice, to Garibaldi's deep chagrin, had been handed over to France, he lent his unique genius as a partisan leader to the Sicilian insurgents against the Bourbon monarchy of Naples. Openly discountenanced, but secretly encouraged by Cavour, he gathered a small army of volunteers, his "red shirts," known as Garibaldi's Thousand, threw himself into Sicily, and cleared it of the 20,000 Bourbon regular troops. Passing over into Italy, he conducted what was in effect a triumphal march to Naples, whence

Francis II took flight. When Victor Emmanuel entered Neapolitan territory, Garibaldi hailed him as king of united Italy.

Even now his adventures in the cause of liberty were not ended. Believing his project to be favoured by the king, he attempted, in 1862, to wrest Rome from the pope; but the Italian government turned against him, and he was hopelessly defeated at Aspromonte, Aug. 29. After a temporary retirement, he again commanded the irregular troops he loved in the war with Austria, 1866; and in 1867, in defiance of his government, again attempted to capture Rome, but was disastrously defeated by its French defenders at the battle of Mentana, Nov. 3. He was again permitted to go into retirement, but the Franco-Prussian War roused him once more, and, when France had discarded the emperor, he gave his services to the French army in the Vosges, 1870. The remaining years of his life he passed as an invalid in his home at Caprera, where he died June 2, 1882. In 1864 he paid his one visit to England, where he was welcomed with immense enthusiasm.

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Garibaldi. Woman's shirt blouse cut on the lines of those worn by Garibaldi and his men. See Blouse.

Garipe. Variant name for the river of S. Africa better known as the Orange (q.v.).

Garigliano (anc. *Liris*). River of S. Italy. Rising in the Apennines, W. of Lake Fucino, it flows, as the Liri, S. past Sora, and thence to the Gulf of Gaeta. Its length is 104 m. Navigable below Pontecorvo, it abounds in fish.

Garlic. Pungent flavoured bulbs of the onion family, of the natural order Liliaceae, genus *Allium*. A native of the East, probably S.W. Siberia, it grows to a height of 2 ft., bearing at the top an umbel of a few whitish flowers mixed with a number of small bulbs. The plant is cultivated in similar way to the shallot, and only the bulb part is eaten. It has a powerful onion-like smell and taste, and is used as a condiment chiefly in S. Europe. The allyl sulphide found in garlic is reputed to be a sure cure for consumption.



Garlic. Flowers and foliage of *Allium oleraceum*

Wild garlic, *Allium oleraceum*, is occasionally used in England as a pot-herb. Another variety, *Allium vineale*, the field garlic or wild onion of America, grows extensively in the pasture lands of U.S.A., and gives a disagreeable flavour to milk, butter, and cheese when eaten by cattle.

Garnet (Lat. *granatus*, seeded). Group of precious stones, composed of three molecules of silica, one of sesquioxide, and three of monoxide. The two last differ widely in their chemical make-up, as the great diversity in colours of the stones testifies. The crystalline form is cubic; the specific gravity ranges from 3.4 to 4.3; all are fairly hard. This last quality makes them of value for technical purposes—for instance, in watch-making—while garnet powder is used for polishing hard gems.

Colour is always distributed uniformly in garnets. The red garnets range in tone from a pale rose-pink (from Mexico) through clear reds, including some of the almandines, to deep blood red of the pyrope and the black melanite of Austria and Italy used for mourning jewelry. Hessonite, a calcium-aluminium variety, also known as cinnamon stone, and sometimes confused with hyacinth (zircon), is of a rich yellowish red, and comes from Ceylon and the Swiss Alps. The American variety (spessartite) is a manganese-aluminium compound, yielding fine gems of dark hue. Pyrope, or Bohemian garnet, is also found in N. and S. America. It has a deep, rich blood-red colour, with a tinge of yellow, occasionally verging on hyacinth red, and probably is the carbuncle of old writers. Rhodolite is a pale rose-red stone, coming midway between the almandine and the pyrope, and is found in N. America. Domantoid is a green calcium-iron variety found in the Urals. Grossularite is a brownish-green Siberian garnet, and topazolite a transparent yellow Piedmontese stone.

Garnett, OR GARNET, HENRY (1555-1606). English Jesuit. Educated at Winchester, he joined the



Henry Garnett,
English Jesuit

Jesuits in 1575, and in 1587 was made superior of the English province. He became involved in the Gunpowder Plot (*q.v.*) and after hiding in Hindlip Hall, near Droitwich, gave himself up, maintaining to the end that he did not approve of the plot, though admitting his knowledge of it. He was executed in S. Paul's churchyard, May 3, 1606. On an empty husk of a blood-stained straw picked up near the gallows a perfect image of the dead Jesuit's face is said miraculously to have appeared "as if it had been painted," and "Father Garnett's straw" created a great stir.

Garnett, RICHARD (1835-1906). British librarian and author. Born at Lichfield, Feb. 27, 1835, he joined the staff of the British Museum in 1851. Becoming superintendent of the Reading Room in 1875, he was Keeper of Printed Books from 1890-99. Awarded the C.B. in 1895, he died on April 13, 1906. Among his many works are *Lives of Carlyle*, 1887; *Emerson*, 1888; *Milton*, 1890; *Twilight of the Gods*, 1888; various poems and translations, and contributions to the *Dictionary of National Biography*, the *Encyclopaedia Britannica*, etc.



R. Garnett.

Garnier, ROBERT (c. 1545-c. 1599). French dramatist. Born at Ferté-Bernard, Garnier studied law at Toulouse, and after practising at the Paris bar, became one of the royal councillors for Le Maine. He wrote a number of poems, mostly lost, and was important in the history of the development of French classical tragedy as a forerunner of Corneille. Garnier's tragedies of *Poëcie*, 1573, *Cornélie*, 1573, and *Antigone*, 1580, are eloquent but dull; but his masterpieces, widely acclaimed in their day, were *Bradamante*, 1582, and *Les Juives*, 1583. These, though their inherent interest is slight, show considerable poetic power and good dramatic technique. Garnier died at Le Mans c. 1599.

Garnier-Pagès, LOUIS ANTOINE (1803-78). French statesman. Born at Marseilles, Feb. 16, 1803,



L. A. Garnier-Pagès,
French statesman

he took part in the revolution of 1830, became an advanced republican deputy for Verneuil, 1842, and joined the ministry of Dupont de l'Èure after the revolution in 1848. He was appointed mayor of Paris, Feb. 1848, and minister of finance in March. In the constituent assembly he sat for the Seine dept. He retired from public life in 1871, and died in Paris, Oct. 31, 1878.

Louis was the half-brother of Étienne Joseph Garnier-Pagès (1801-41), a prominent radical and republican orator, who sat as deputy for Isère, 1831-34, and for Le Mans, 1835-41. *Pron.* Garnyay-Pazh-ayss.

Garnishee (Old Fr. *garnir*, to warn). Term used in English law. It is the procedure whereby a judgement creditor can obtain an order from the court directing a person who owes money to the judgement debtor to pay it over to the judgement creditor. For example, A has a judgement for £100 against B. B has £1,000 in Coutts's bank. A can obtain an order from a master ordering Coutts's to pay him £100 of B's money.

Garó. Primitive tribe in the Garo hills, S.W. Assam. Numbering in 1911 187,351, they show kinship with the plains Kacharis. Short, dark, animistic, they practise fowl-sacrifice, matriarchy, and teknonymy—naming parents after their children. Headhunting has disappeared since British rule was established, after expeditions from 1790 to 1873. American Baptist missions work successfully among them. *See* Bodo.

Garó Hills. District of S.W. Assam. The district mainly consists of hills, and is principally inhabited by the Garos (*q.v.*), who form about three-quarters of the population. The area is 3,140 sq. m.; that under cultivation is uncertain. The principal articles of imports are rice, dried fish, pigs, fowls, goats, cattle, cloth and ornaments, while the exports consist of cotton, forest products, etc.

Garonne. River of France. It rises in the Pyrenees near Maladetta, and is for a few miles a Spanish stream. It enters France in the dept. of Haute Garonne, and, flowing mainly N.W., reaches the sea just below Bordeaux.

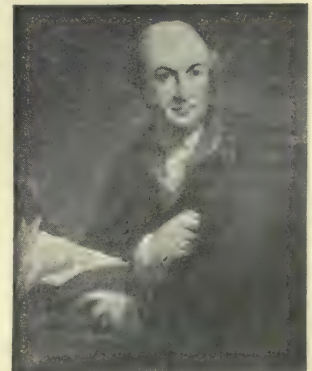
There it receives the Dordogne, and the two unite to form the estuary of the Gironde. Its chief tributaries are the Tarn and the Lot, both on the right; others are the Ariège, Save, Baise, Gers, and Salat. Toulouse and Agen stand on it, and it drains an area of over 30,000 sq. m.

Gar Pike. Name sometimes applied to the gar-fish, but properly belonging to *Lepidosteus osseus* and of the American lakes.

Garrauli. Petty state of the Central Provinces, India, in Bundelkhand. Its area is 25 sq. m. Gopal Singh, who opposed the British occupation of Bundelkhand in 1803, and caused much trouble to the British authorities, received a pardon and a grant of this territory in 1812. Pop. about 6,000.

Garrick, DAVID (1717-79). English actor. Born at Hereford, of Huguenot descent, on Feb. 19, 1717, he was educated at Lichfield grammar school, and later at Samuel Johnson's academy there. Becoming close friends, Johnson and Garrick set off for London to seek fame and fortune in March, 1737, arriving, according to the former, with only fourpence between them. Until 1741 Garrick engaged, with scant success, in a wine business, but his main interests were in the stage. His play *Lethé* was produced in 1740, and in March, 1741, he made his first appearance on the stage as Harlequin, appearing at Goodman's Fields Theatre in Oct. as Richard III. His great success in this part led him to withdraw from business, and he became definitely an actor under his own name.

From 1742-45 he played at Drury Lane, and after a season in



After R. E. Pine, Nat. Port. Gall.

Dublin with Sheridan, appeared at Covent Garden during 1746-47. After this Garrick became the chief proprietor of Drury Lane,

Garrick Club. London club. It was founded in 1831 by Francis Mills as a society "in which actors and men of education and refinement might meet on equal terms." The original club house was at 35, King Street, Covent Garden; the present premises, designed by F. Marrable, at 15, Garrick Street, Strand, were opened in 1862. Nearly all the leading actors and many eminent literary men are among the 650 members. See The Garrick Club, P. H. Fitzgerald, 1904.



Garrick Club, London. The dining room, notable, like the other rooms in the building, for its collection of theatrical pictures

where he henceforth appeared. Specially noteworthy were his Shakespearian productions, which marked a great revival in the popularity of Shakespeare's plays and an attempt to secure accuracy in costume and mounting. Hamlet, Lear, Macbeth, and Richard III were among his most distinguished performances. After 1766 Garrick only appeared occasionally, except for his farewell season in 1776. His death on Jan. 20, 1779, called forth Johnson's famous remark that the event had "eclipsed the gaiety of nations, and impoverished the public stock of harmless pleasure." He was buried at the foot of Shakespeare's statue in Westminster Abbey.

A man of wit and versatility, Garrick enjoyed the friendship of many of the most distinguished figures of his day, to whom his house at Hampton was well known, and his services to the English stage were inestimable. His long association with the beautiful "Peg" Woffington ended in 1749, when he married Eva Maria Veigel, a German lady, who survived him until 1822.

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Garrison (Fr. *garrison*, from *garnir*, to supply). Armed force ostensibly employed to defend any place, especially a fortress. Places in the United Kingdom where the R.G.A. companies are stationed may indicate the points where our security might be threatened by an invader, but towns like Brighton used to be called garrison towns because a regiment was, for the sake of convenience, quartered there. See Fortress.

Garrison, LINDLEY MILLER (b. 1864). American politician. Born at Camden, New Jersey, the son of the Rev. J. F. Garrison, he was educated in Philadelphia and at Harvard. He became a barrister in Philadelphia in 1886, and two years later began to practise at Camden. In 1898 he moved to Jersey City, where for some six years he was head of a large firm. In 1904 Garrison was made vice-chancellor of the state of New Jersey, and in March, 1913, Wilson appointed him secretary of war, which position he held until Feb., 1916.

Garrison, WILLIAM LLOYD (1805-79). American abolitionist. Born at Newburyport, Massa-

chusetts, Dec. 12, 1805, he was apprenticed to the printer of The Newburyport Herald, where he gained a thorough knowledge of the craft and considerable experience



in journalism. Before he was 20 he was writing articles, under the pseudonym of Aristides, attacking the institution of slavery. In 1826 he became editor of The Newburyport Free Press, and in 1827 of The National Philanthropist, the first paper founded in America to advocate temperance. In 1829 he joined the Quaker, Benjamin Lundy, in his work on The Genius of Universal Emancipation, a paper founded by Lundy eight years previously. Garrison now expressed views so repellent to the prevalent opinions on the slavery question that a libel action against him ended in his imprisonment. On his release he made a lecturing tour on behalf of the cause, and in 1831 started to publish at Boston a weekly journal, The Liberator.

In face of great practical difficulties, he continued to produce his paper until 1865, having witnessed the triumph of his cause in 1863. Meanwhile, he wrote Thoughts on African Colonization, 1832, and, by lectures and the founding of the Anti-Slavery Society in Philadelphia in 1843, worked indefatigably to rouse his countrymen from their apathy on this subject. He visited Great Britain on the same mission in 1833, 1846, 1848, and again in 1867. He died in New York on May 24, 1879.

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Garrod, SIR ARCHIBALD EDWARD (b. 1857). British physician. Born Nov. 25, 1857, the son of Sir Alfred B. Garrod, also a physician and an F.R.S., he was educated at Marlborough and Christ Church, Oxford. For his medical training he went to St. Bartholomew's Hospital, after which he began to practise as a specialist. He became physician to St. Bartholomew's and to the



L. M. Garrison, American politician



Sir A. E. Garrod, British physician

Russell

Hospital for Sick Children, while his scientific writings earned for him his F.R.S. In 1908 he was Croonian lecturer at the Royal College of Physicians. During the Great War Garrod served with the R.A.M.C., being knighted in 1918, and in 1920 he succeeded Sir W. Osler as Regius professor of medicine at Oxford.

Garros, ROLAND (1888-1918). French airman. Born at St. Denis, in the island of Réunion, he went to



Roland Garros,
French airman

France and studied music at Nice and Paris. Aviation, then in its infancy, attracted him, and he learned to fly at Juvisy in Santos-Dumont's *moiselle*, obtaining his certificate in 1910. In 1911-12 he held several height records, and came to the front as a most daring and expert flyer. He was 2nd in the races from Paris to Madrid, and from Paris to Rome, and became the idol of France by a successful flight of 500 m. across the Mediterranean from San Raphael to Bizerta. He also won in 1912 the Grand Prix of the Aero Club of France in a violent storm, and in 1914 competed in the race from Hendon to Paris and back.

When the Great War broke out Garros joined the famous Cigognes (Stork) squadron, becoming flight-lieut. at the end of 1914. Greatly feared by enemy airmen, in April, 1915, when descending low during bombing operations, his machine was hit, and he was forced to land near Ingelmunster, in W. Flanders, being eventually captured. He escaped, Feb., 1918, and did further good work against the enemy until Oct. 5, 1918, on which date the Germans reported that he had been shot down and killed. See *Aeroplane*; *Air Records*, etc.

Garrotte (Span. *garrote*, cudgel). Spanish method of execution by strangulation. Originally the condemned person was seated in a chair fixed at the back to an upright post. A cord was placed round his neck and also round the post. Strangulation was produced by twisting the cord with a stick after the manner of a tourniquet, for which a former alternative term was garrot. Later on the chair was provided with a hinged iron collar, in the back of which was a sharp-pointed screw, or a lever. Death was caused by dislocation of the spinal column, or by a blade which on being forced forward severed the spinal cord.

During the Inquisition prisoners who recanted were occasionally offered death by the garrotte as a mark of favour, instead of death by actual burning. But the former, in the hands of a careless or unskillful executioner, was capable of inflicting severe torture before the end came. Possibly the garrotte came into use in Spain as a result of the Moorish rule in the country, for, as originally employed, it closely resembles the use of the bowstring in the East.

The winter of 1862-63 was marked in Great Britain by a serious outbreak of highway robbery with violence, many victims being attacked from behind and half-strangled by a cord or handkerchief thrown over their heads. The evil became so serious that in 1863 the Garrotting Act was passed authorising the punishment of offenders by flogging, which proved an effective deterrent.

Garrucha. Seaport of Spain, in the prov. of Almería. It stands on the Mediterranean, 40 m. N.E. of Almería, and although it has no railway, it exports mineral ores, esparto, and fruit. Pop. 5,000.

Garry. Lake of Canada, in the North-West territories. It is in lat. 66°, and on the borders of the Arctic circle. The Back, or Great Fish, river passes through it, carrying its waters to the Arctic Sea. Its area is 980 sq. m. There is also a Garry Island, this being in the Arctic Ocean, off the mouth of the Mackenzie river.

Garrya. Small genus of evergreen shrubs. They belong to the natural order Cornaceae, and are



Garrya. Spray of foliage and flower and sectional diagram of a berry

native of the warmer parts of America. They have opposite, oval or elliptic leaves, and greenish-white or yellowish flowers in long pendulous sprays; the males being on one plant, the females on another. *Garrya elliptica*, a native of California, is frequently grown in the warmer parts of Europe.

Garshin, VSEVOLOD MICHAÏLOVITCH (1855-85). Russian novelist. Known as an infant prodigy,

his *Essay on Death*, written when he was 17, is a piece of surprising realism. His short stories, which form his best works, showed him at once imbued with the spirit of the romantics, and greatly influenced by Tolstoi, both in vivid war scenes and in a tendency to allegory. Loathing war, he served as a soldier, that he might not shirk what others were compelled to endure. The execution of a friend drove Garshin mad, and though he recovered his mind was unbalanced, and finally he committed suicide.

Garstang, JOHN (b. 1876). British archaeologist. Educated at Blackburn and Jesus College, Oxford, he devoted himself to archaeology, and excavated Roman sites at Ribchester, Richborough, etc., and Egyptian sites, including Abydos, Beni-Hassan, and Negada. In 1907 he became John Rankin professor of archaeology in Liverpool University. He excavated the Hittite site of Sakjegeuzi, 1908 and 1911, and the Ethiopian site of Meroë, 1909-14. During the Great War he was engaged on Red Cross work in France. Besides his official reports he published *Burial Customs of Ancient Egypt*, 1907; *The Land of the Hittites*, 1910; *Meroë*, 1911; and, jointly with P. E. Newberry, *Short History of Ancient Egypt*, 1904. See portrait, Introduction.

Garstin, SIR WILLIAM EDMUND (1849-1925). British engineer. Born Jan. 29, 1849, he was educated at Cheltenham College and King's College, London. In 1872 he entered the India public works dept. and was employed for a time in Egypt.

In 1892 he left the dept. to become inspector-general of irrigation in Egypt, being also under-secretary for public works. He held these positions until 1904, and was responsible for the improvements carried out under Lords Cromer and Kitchener. Knighted in 1897, in 1904 Garstin was appointed a director of the Suez Canal Co. He died Jan. 8, 1925.

Garston. Port and parish of Lancashire, now included in the city of Liverpool. It stands on the Mersey, 6m. S.E. of Liverpool. Here are the docks of the L. & N.W. Rly., from which coal is shipped. Salt is the chief manufacture, and there are also iron and copper works. Pop. 23,850. There is a parish of the same name near Watford, Herts.



Sir W. E. Garstin,
British engineer

Garter, ORDER OF THE. British order of knighthood, the most ancient and illustrious in the world.



Garter. Insignia of the Order. Top, star; centre, the garter; below, collar and George

It was originally instituted as a purely military order by King Edward III in or about 1348, but in modern times is more generally bestowed on royal personages and on leading representatives of the British peerage. The first statutes limited its number to the sovereign, the prince of Wales, and 24 other knights companions. The order was enlarged during the reigns of George III and William IV, and now includes the above 26 knights as a constituent part of the original foundation, together with such descendants of George I as have been elected, or may be eligible to be elected, with the addition of those foreign rulers and princes who may be admitted.

Each knight is allotted a stall in S. George's Chapel, Windsor Castle, on which is set up a plate engraved with his titles and coat of arms. The earlier plates are some of the most interesting and remarkable examples of heraldic design in existence. Above each knight's stall are also placed, during his lifetime, his banner, sword, helmet, and crest. There was formerly a special ceremony in the chapel, when the new knight was invested with the habits and insignia of the order and conducted to his stall, but in the case of ordinary knights companions this ceremony has been dispensed with for some considerable time, and they are usually invested by the king personally. The prince of Wales was, however, formally installed at a special service which was held in June, 1911.

Insignia of the Order

The habits and insignia of the order are the garter, mantle, sur-

coat, hood, star, collar, George and lesser George. The garter, of dark blue velvet inscribed in gold with the motto of the order *Honi Soit Qui Mal Y Pense* (Evil be to him who evil thinks), is worn below the left knee. The star has a buckled circular garter, with the motto, enclosing the cross of S. George, the whole enamelled in the proper colours, and surrounded by an eight-pointed star of silver rays; it is worn on the left breast. The collar is of gold and consists of 26 Tudor roses (alternately red and white), each within a circular garter, and joined together by chains and interlaced knots of cords. The George, in enamelled gold, representing S. George and the dragon, is suspended from the collar. The lesser George has the same device on an enamelled ground surrounded by an oval garter. It is worn suspended from a broad ribbon of garter blue, which passes over the left shoulder and under the right arm. On the death of a knight companion his insignia are returned to the sovereign.

The original statutes provided that on or about the feast of S. George (April 23) the knight companions should meet at Windsor and attend a special service in S. George's chapel. This was carried out for many years, but at irregular intervals, and was finally discontinued in the 19th century. In 1911, when the prince of Wales was installed, and again in 1912-13-14, however, King George V revived this special service.

The order has the following officers: prelate, the bishop of Winchester; chancellor, the bishop of Oxford; registrar, the dean of Windsor; herald, garter king of arms; gentleman usher of the black rod; and secretary. Included in the order of the garter under the statutes are the canons and the military (formerly called poor) knights of Windsor, and the lay clerks and choristers of S. George's chapel. See *Heraldry*; *Knighthood*; *Military Knights of Windsor*.

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Garter King of Arms. Principal officer of the English Herald's College. His office was instituted in 1417. He is herald of the order of the garter.

Garth (Icel. *garthr*, enclosure). Enclosed space of ground, particularly the turf within a cloister, known as the cloister-garth. The term is also used to describe a kind of dam or weir for fishing purposes. See *Close*.

Gartok. Chief town in W. Tibet. It is situated at an altitude of 14,656 ft., 800 m. W. of Lhasa. It was opened in 1904 as a trade mart, with a British commercial agent, as a result of the Young-husband expedition to Lhasa.

Garton Foundation. British politico-economic trust. It was founded by Sir Richard Garton (b. 1857) for the purpose of scientific inquiry into political and economic questions. The results of the inquiries are usually published from the headquarters in London.

Gartsherrie. District of Scotland. Formerly an independent municipality, it is now part of Coatbridge. It has a station on the N.B. Rly., and it is also served by the Monkland Canal. Iron-works form the chief industry, while around are coal mines. Pop. 16,200. See *Coatbridge*.

Garua. Town of Cameroons Protectorate, W. Africa. In the N.W., it is situated on the Benue river, which is navigable for shallow boats to this point from June to Dec. It is the chief centre of the Garua district, and an important station on the Benue route to the Niger. It surrendered to the Allies, June 10, 1915. Pop. 530,000. See *Cameroons*. Conquest of.

Garub. Settlement of the S.W. Africa Protectorate. It is a station on the line running inland from Luderitz Bay or Angra Pequena, about 70 m. from that place. It was seized by the forces of the Union of S. Africa under Sir Duncan Mackenzie, Feb. 22, 1915, and at the peace passed into British possession. See *South-West Africa*, Conquest of.

Garumnian. Local stage of the Upper Cretaceous series of stratified rocks reaching a thickness of 2,500 feet; it is developed in Provence. It is notable on account of a fresh-water origin, containing fresh-water and terrestrial fossil shells.

Garvice, CHARLES (d. 1920). British novelist. He began by publishing a volume, *Eve and*



Garth King of Arms

Other Verses, and in 1875 published a three-volume novel, Maurice Durant. Between 1890-1900 his stories, mainly characterised by healthy sentiment, romantic happenings, and happy endings, began to be widely popular in America. Similar success came to him in England later, and he wrote a long succession of novels on conventionalised lines. They included *Just a Girl*, 1899; *Her Heart's Desire*, 1900; *The Outcast of the Family*, 1901; *In Cupid's Chains*, 1903; *Love Decides*, 1904; *The Gold in the Gutter*, 1907; *The One Girl in the World*, 1916. He died at Richmond, March 1, 1920.



Charles Garvice,
British novelist
Russell

Garvin, JAMES LOUIS (b. 1868). British journalist. While in his teens he made his first contribution to journalism in *The Eastern Morning News*, Hull. Correspondent of *United Ireland* in 1890, he was leader writer on *The Newcastle Chronicle*, 1891-99; joined the staff of *The Daily Telegraph* in 1899; edited *The Outlook*, 1905-6; *The Pall Mall Gazette*, 1912-15; and became editor of *The Observer* in 1908. President of the *Institute of Journalists*, 1917-18, he is known as a writer and speaker on foreign and fiscal topics, and as a student of German history, literature, and economics.

Gary. City of Indiana, U.S.A., in Lake co. At the head of Lake Michigan, 30 m. S.E. of Chicago, it is served by the Lake Shore and Michigan Southern and other rlys. The city owes its prosperity to the *United States Steel Corporation*, which in 1906 selected it as the site for the establishment of its chief works. The corporation owns most of the land on which the city stands, and also controls the electricity, gas, water, and other public utility undertakings. Gary is the greatest steel-producing city in the world, and has important tin-plate and bridge-building works, foundries, locomotive and car shops, and cement and tube factories. The chief buildings are the city hall, the public library, and two hospitals. Pop. 16,800.



James Louis Garvin
Haines

GAS: ITS NATURE AND USES

A. J. Liversedge and Capt. E. de W. S. Colver

A number of articles deal with the subject of gas. It is first defined from the theoretical point of view. A section follows on gas in mines. Gas in warfare is the subject of a separate article, and then follow a number of entries dealing with this matter, e.g. Gas Helmet; Gas Poisoning. See also Gas Company; Gas Engine; Gas Manufacture

Gas or vapour is matter in a perfectly fluid state. Sir Oliver Lodge differentiated solids, liquids, and gases in the statement: "A solid has volume and shape; a liquid has volume, but no shape; a gas has neither volume nor shape."

Oxygen, hydrogen, and nitrogen are common gases. Both solids and liquids may change into gas by the application of heat, as gases may be transformed into liquids and solids by cold. Certain gases, e.g. hydrogen and oxygen, were once termed "permanent gases" on the assumption that they were not liquefiable, an assumption no longer true. The distinction between a gas and a vapour that may be drawn is that the latter is more readily made liquid by a small decrease of temperature or pressure.

Boyle, Dalton, Charles

The study of the properties of gases and the laws which govern them is one which has laid the very foundations of chemistry, and has advanced modern physics in an incalculable degree. The general laws governing gases are simple, and are as follows:

Boyle's Law, enunciated by Robert Boyle in 1662, states that if the temperature of a gas be kept constant its volume changes in a definite way as the pressure changes; if the pressure P is doubled the volume V is halved, and so on. This, an experimental law, is not strictly accurate, especially under high pressures.

Dalton's Law is due to John Dalton, who in 1801 began to publish his series of important papers on the properties of gases, and he enunciated the fact that if a number of gases are contained in the same vessel they mix homogeneously, and that the pressure on the sides of the containing vessel is the sum of the pressures of each of the gases.

Charles's Law deals with the effect of temperature on the volume of a gas. Charles, Dalton, and Gay-Lussac at about the same time discovered that if the pressure is kept constant the volume of a gas increases according to the law $v = v_1(1 + kt)$ where v is the volume at $t^\circ\text{C}$, v_1 that at 0°C . and k is a constant. The importance of the law is that k is the same for all gases, $1/273$. This law again is not strictly accurate, for if it were it would lead to the result that at -273°C a gas

would cease to have volume. At very low temperatures the law changes, but enough investigations have not been carried out to say exactly in what way.

LAWS OF DIFFUSION. Since a gas tends to fill its container, if two containing vessels filled with gases are joined together the two will mix. The rate of mixing, or diffusion, depends upon their relative densities. The law of diffusion states that the rate is inversely proportional to the square root of the relative densities. Because of this property of diffusion the proportion of nitrogen and oxygen in the air, for example, is the same in England as Australia, on the sea coast as on the top of a mountain. The different sensation air gives in different places is due to temperature, water content, etc., and not to any variation in composition of its main gases. When a gas is allowed to escape through a small hole it is said to effuse. The rate of effusion varies as diffusion, and this fact has been made use of to discover the density of one gas in terms of another.

Avogadro's Law states that in equal volumes of different gases at the same pressure and temperature there are an equal number of molecules.

Absorption and Solubility

Solids have the property of condensing gases in a thin film on their surfaces and of absorbing or occluding them. Palladium, for example, under certain conditions will absorb 900 times its own volume of hydrogen; coconut charcoal 170 times its own volume of ammonia. Gases are easily soluble in many liquids, the quantity being dissolved being proportional to the pressure. Gases absorb light in different ways and have consequently absorption bands in the spectrum. They are poor conductors of heat, and as conductors of electricity vary according to their temperature, pressure, etc. Air, for example, is a conductor at normal pressures, and an insulator at low pressures. In the kinetic theory of gases it is assumed that the molecules of a gas are in constant motion along straight lines; during such motion they impinge upon other molecules, gaseous, liquid, or solid, and suffer a change of direction and an alteration of speed.

Consequently the speed of movement of the molecules of a gas is calculated as the mean or average speed of motion; the mean speed of hydrogen molecules is 1,859 metres, roughly 2,000 yds., a second, i.e. 25 m. in 22 seconds; the values for nitrogen and oxygen are 492 and 465 respectively. Under similar conditions of temperature and pressure equal volumes of all gases contain an equal number of molecules. The density of a gas is usually related to that of hydrogen; in such terms the densities are: oxygen, 15.96; nitrogen, 14.03; coal gas, about 5. In popular usage the term gas implies "coal gas," the nitrous oxide used by the dentist, or "natural gas." See Coal Gas; Natural Gas; Liquefaction of Gases; Chemistry; Molecule.

GAS IN MINES. The workings in all classes of mines are liable to contain gas; but coal mines are peculiarly subject to this contingency. The chief gases which occur are sulphuretted hydrogen (H_2S), frequently called "stink damp," which doubtless arises from the decomposition of pyrites; carbon monoxide (CO), "white damp"; carbon dioxide (CO_2) or carbonic acid gas, "choke damp," "black damp," or "after damp"; and marsh gas (CH_4), commonly known as "fire damp." The carbon monoxide and the carbonic acid gas may be due to natural causes or be simply the residual products of the combustion of explosives used in the mines. Both are injurious to life, the former being a deadly poison. The most important of all these gases, however, is the marsh gas or fire damp, which is the chief agent in the production of mine explosions. See Mining; Explosion.

Gas. Term commonly used collectively to describe the poisonous and irritating chemicals discharged against hostile troops as one phase of modern warfare, irrespective of whether the substances used are actually gases, liquids, or solids. The method was first used in the Great War, contrary to the provisions of the Hague Convention, the first attack being that made by the Germans at Ypres in April, 1915.

The first method employed was to discharge clouds of gas against the enemy from cylinders kept in the trenches, but the utility of this method was not only limited by the restricted choice of gases which are suitable, but also by the necessity of only making the attack when weather conditions were favourable. The method has been largely superseded by the use of

shell charged with "gas" which is released when the shell explodes. This method was introduced on a large scale by the Germans in the Somme battles of 1916, and shell of this nature became part of the standard equipment of both the artillery and trench mortar batteries. Gas shell permit of a much wider range of chemicals being utilised.

The chemicals used may be lethal in their effect or incapacitate troops either by a lachrymatory effect or by causing violent sneezing, the latter effect also making it impossible for troops to fit or retain their gas masks, when they may be subjected to a bombardment with lethal gas. The chief desiderata in gas warfare are: high concentration of the gas in the atmosphere, surprise in tactics, and the use of unexpected chemicals. During the Great War, except in the first unexpected attacks, progress in protective devices kept in advance of the gas used, and casualties were not abnormal. There is no mechanical difficulty in using aeroplane bombs charged with gas, but so far this method has not been employed. See Ammunition; Chemical Shell; Gas Cloud; Gas Helmet; Gas Poisoning; Gas Shell; Lachrymatory Shell; Mustard Gas; Sneezing Gas; Tear Shell.

Gas-bag. In aeronautics, flexible bag made of fabric, and employed to hold the gas in an airship. Gas-bag is also slang for the airship itself. See Airship.

Gas Check. Device to prevent or minimise the escape of propellant gases between the projectile and walls of a gun barrel.



Gas Check. Sectional view of driving band illustrating gas check

Many types of construction were tried to prevent this escape, including shell with loose bases, the latter being driven forward by the pressure of the propellant gases, compressing a lead or copper washer against the body of the shell and forcing it into the grooves. Lead-coated shell were much used with the early breech-loaders, and another device was a copper plate of larger diameter than the

bore, fixed to the base of the shell, this being forced into the shape of a cup and the edges held tightly against the barrel when the piece was fired. Modern gas checks employ a similar principle, but the device is incorporated with the driving band, a lip being formed, under which the powder gases penetrate, holding the lip firmly against the barrel. See Driving Band; Shell; Windage.

Gas Cloud. Term employed to define the direct discharge of poison gas in warfare. Chlorine, phosgene, and bromine have been utilised in this way, the gases being compressed into cylinders like those used for oxygen, etc.

Holes are dug in the front walls of the trenches and the cylinders placed therein, covered with moss soaked in sodium carbonate, and then protected by sandbags. A metal tube is connected to the cylinder valve and carried over the parapet. When a gas attack is to be made the valves of all the cylinders on that section of the front are opened, and the gas forms a cloud which will travel down hill or be carried by the wind if the latter is not too strong or gusty. Warning of such attacks is generally given by the noise of the gas escaping from the cylinders, and it is difficult to obtain effective concentration at any distance. Gas clouds were disguised by mixing or alternating them with smoke clouds, but during the later stages of the war were largely superseded by the use of poisons in shell.

Gascoigne, GEORGE (c. 1525-77). English poet. Born at Cardington, Bedfordshire, and edu-



George Gascoigne, English poet

cated at Cambridge and the Inns of Court, he was M.P. for Bedford, fought in the Low Countries, took part in the famous festival at Kenilworth, and died at Stamford. Oct. 7, 1577. To him is due the first English prose comedy, *The Supposes*, 1566 (an English adaptation of Ariosto's *Gli Suppositi*), which supplied the underplot of Shakespeare's *The Taming of the Shrew*. In collaboration with Francis Kinwelmersh he wrote the second English tragedy, *Jocasta*, 1566 (from an Italian version of Euripides' *Phoenissae*); one of the earliest English satires in blank verse, *The Steel Glass*, 1576; the first critical essay on English versification, *Certain Notes of Instruction in English Verse*, 1575; and

Ferdinando Jeronimi, 1572, probably the first English imitation of the Italian novella. See Works, J. W. Cunliffe, 1907, etc.; Life and Writings, F. E. Schelling, 1894.

Gascoigne, SIR WILLIAM (c. 1350-1419). English judge. He was made one of the king's ser-

jeants in 1397, and chief justice of the king's bench in 1400, enjoying a high reputation for impartiality and fearlessness. He is said to have refused

Henry IV's request to pronounce sentence on Archbishop Scrope, who was implicated in Hotspur's insurrection, and is traditionally supposed to have committed Prince Hal to prison for striking him in court. (cf. Shakespeare's Henry IV, part 2.)

Gas Company. Limited liability company formed to supply the public with gas, such being under some greater restrictions than ordinary Companies. There is nothing to prevent a private person making his own gas supply, except the risk of creating a public nuisance. This involves such a respect of rights and easements, public and private, that in practice gas in Great Britain is supplied only by municipal authorities and commercial companies.

The rights and limitations of the companies are governed by a large body of statutes, mainly the Gasworks Clauses Acts, 1847 and 1871. These restrict the profits of commercial gas supply, and provide for the presentation of accounts periodically to the local authorities.

The London local authorities have no power to supply gas in the metropolitan district, and each of the metropolitan companies has a specific zone of activity for which it possesses the monopoly.

Gas companies contract to supply gas at prices fixed by special statutes, and measured by meters tested and stamped under the Sale of Gas Act. These meters are the property of the company, which must keep them in repair, and they cannot be taken in distraint for rent. Users are entitled to have the meters tested by official gas inspectors. The theft of gas can be dealt with as a larceny, and the fraudulent use of gas, or wilful damage to fittings, may be punished by police court proceedings. The quality and purity of gas are also subject to official control.

If the gas rent is not paid, the supply may be cut off and the meter removed. If a tenant remains within the zone of the gas company which has cut off his gas supply, the company need not restore it until the arrears are paid. An incoming tenant is not responsible for the arrears left unpaid by his predecessors.

Gas companies are subject to severe penalties for committing nuisances by way of obstruction in public highways, or of pollution of air or water, or for the escape of gas, under a series of Acts relating to London and other parts of the country respectively.

Gascony. One of the old provs. of France. Bounded on the W. by the Atlantic, Gascony lay contiguous with Languedoc and Foix on the E., with Navarre and Béarn on the S., and with Guienne on the N. Gascon territory would thus fall within the modern depts. of Landes, Hautes-Pyrénées, Gers, and parts of Haute-Garonne, Lot-et-Garonne, Ariège, and Tarn-et-Garonne. The centre of government was Auch.

The name comes from that of the Iberian tribe of the Vascones, who invaded the Roman prov. of this district, known as Novempopulana, between 580 and 590, and settled there in considerable numbers. After an unsuccessful invasion by the Frankish king Chilperic, Gascony (Vasconia) was invaded by Thierry II of Burgundy, and Theodebert of Austrasia, in 602, and Duke Genialis was nominated over the province. The people retained a great measure of independence, establishing a ducal dynasty of their own. The Vascones, under Duke Lupus I, attacked Charlemagne at Roncesvalles, in 778. By 819, however, Frankish dukes were ruling. A duke Totilus is mentioned as receiving Gascony from Louis I the Pious, and among his successors were Séguin, William, and Arnaud, on whose death, in 864, the Gascons restored Sanchès, one of their old line. Sanchès's descendants held the crown until c. 1073, when Gascony became merged in Aquitaine.

Eleanor, daughter of William X, duke of Aquitaine, brought Gascony as a part of her dowry to Prince Henry of England, later Henry III, in 1152. It thus became part of the English possessions in France. It was governed for a time by Henry's sons, Richard and John successively, but its history was thenceforth closely linked with that of Aquitaine. Simon de Montfort was the most notable of the English governors, 1248-52. There was much internal

dissension, the Gascon nobility inclining towards the French allegiance, while the merchant classes favoured the English connexion. The peace of Brétigny, 1360, assigned Gascony definitely to Edward III, with Aquitaine, and Edward in return abandoned all claims to the French crown. It was a storm centre of the Hundred Years' War, and in 1453 returned finally to union with the French kingdom.

The Gascon dialect, which is believed to have changed very little from its medieval form, still prevails in the district. It exercised a considerable influence on the development of the French language during the 16th century, especially through several distinguished writers of Gascon origin, notably Montaigne, and by the infusion of many Spanish and Provençal words and expressions. The exuberant and vaunting character of the Gascon people is proverbial throughout France, the term *gasconade* being applied to bragging, flamboyant speeches or actions. See Aquitaine; France; Hundred Years' War; consult also Histoire de la Gascogne, Montezun, 1846-50; La Vasconie, étude historique et critique, Jaurgain, 1898-1902.

Gascoyne. River of W. Australia. It rises in three headstreams, near the Carnarvon Range, in the N.W. division, and flows in a generally W. course of 300 m., to empty into Shark Bay, near Carnarvon.

Gaselee, SIR ALFRED (1844-1918). British soldier. Born June 3, 1844, he was educated at Felstead and Sandhurst, obtaining a commission in the 93rd Highlanders in 1863. He served on the Indian N.W. frontier, 1863; against the Afriids, 1877-78; in the Afghan War,



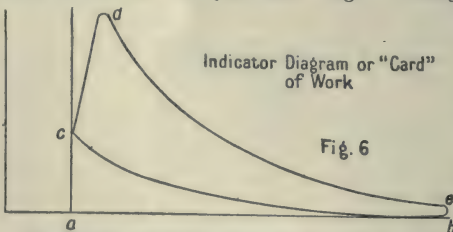
Sir Alfred Gaselee
British soldier
Lafayette

1878-80, taking part in the march to Kandahar; in the Zhob Valley expedition, 1884; and in nearly all the frontier fighting down to 1900, including the Wazaristan and Tirah campaigns. A brigadier and K.C.B., he commanded the British forces in the advance on Peking to the relief of the legations, 1900, when his leadership contributed much to the success of the Allied operations. In 1906 he was promoted general, retiring in 1911, after commanding the Northern army in India, 1907-8. He died at Guildford, March 29, 1918.

Gas Engine. Instrument for developing power. It is distinguished from the steam engine by the fact that the heat which is the immediate source of its power is developed in the engine cylinder behind the working piston, which is moved directly by the expansive force which accompanies the development of the heat. That is to say, the fuel—gas—is burned directly in the engine cylinder, and not in a separate vessel such as a steam boiler.

About 1680 the French scientist, the Abbé d'Hautefeuille, and the Dutch mathematician, Christian Huygens, both suggested a form of engine in which the power was to be derived from the explosive energy of gunpowder. A century later an English patent was granted to John Barber for what he called an "exploder," in which he proposed to explode a mixture of hydrocarbon gas and air, and in that way develop motive power; and in Barber's specification is the first suggestion of the gas engine of which there is any record.

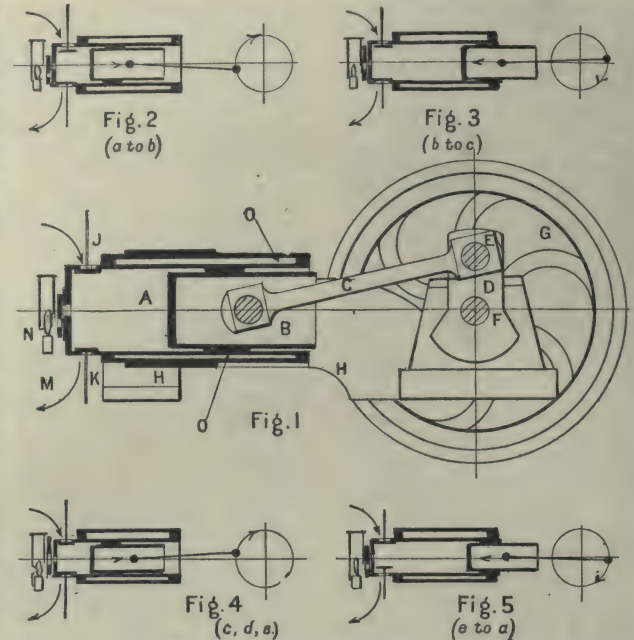
A little later a French engineer, Philippe Lebon, suggested the use of coal gas as a source of power; but it was not until 1860 that another French inventor, Étienne Lenoir, designed a practical engine, of which several hundreds were made both in France and in this country, although it was of only very limited power, and consumed much gas, over 140 cubic feet per horse-power hour. Two years later



Gas Engine. Indicator diagram, showing varying pressure of gases in cylinder. For explanation, see text

another French scientist, Beau de Rochas, proposed the adoption of the principle of compressing the mixture of gas and air before exploding it in the engine cylinder, and suggested the working "cycle," which has since been generally adopted. Improvements were added to Lenoir's design by Dr. Nicholas A. Otto and Eugen Langen, and in 1878 the former embodied the principle of compression which had been suggested by Beau de Rochas in a design of engine which was the first to attain real success.

The principle of the Otto engine may be readily understood by refer-

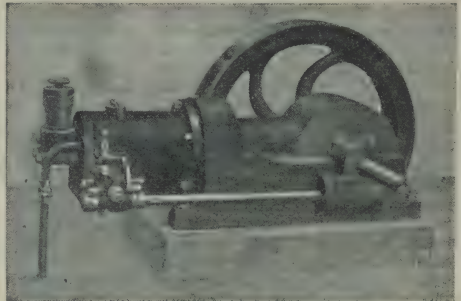


Gas Engine. Typical 4-cycle gas engine. Fig. 1. A, cylinder; B, trunk piston; C, connecting-rod; D, crank; E, crank-pin; F, crank-shaft; G, fly-wheel; H, framing; J, gas and air inlet valve; K, outlet valve for burnt gases; M, flame slide valve; N, ignition gas flame; O, water jacket. Fig. 2. First stage of cycle, drawing in gas and air, a to b in indicator diagram. Fig. 3. Second stage, compression of gases, b to c in indicator diagram. Fig. 4. Firing of gases, c, d, e of indicator diagram. Fig. 5. Fourth stage, driving out burnt gases, e to a of indicator diagram. See text

ence to the indicator diagram and Fig. 1. The engine works on what is called a four-cycle, that is to say there is one impulse (explosion) in the engine cylinder to every four strokes of the piston, two forward and two back, or in two complete revolutions of the crank. The cycle is made up of the following move-

(3) The mixture is exploded, and the piston advances a second time, driven forward by the force of the explosion. This movement is represented by the line *cdb*, the height of *d* above the line *ab* indicating the maximum pressure upon the explosion of the mixture. (4) Finally the piston returns from B to A, and drives out as it moves the waste gases resulting from the combustion of the original charge.

The fact that only one explosion takes place in every four strokes of the piston or two revolutions of the crank results in a very notice-



Gas Engine. Two to seven Brake Horse Power (B.H.P.) horizontal gas engine



blast-furnace gas employed, and in the rejected hot per brake horse gases, much heat is thrown away; power hour. The the percentage actually utilised calorific values of in developing useful power ranging from 15 p.c. to 30 p.c. It has, therefore, been proposed in the Still and other engines to utilise this waste heat by raising steam with it and using the steam to drive a supplementary engine.

Owing to the very high tem-

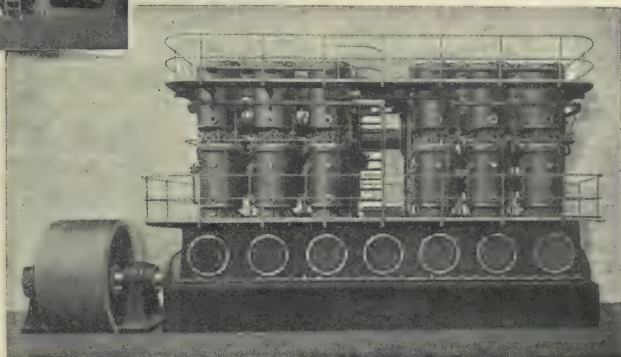
A. Williams

able feature of the ordinary type of gas engine, the heavy fly-wheels employed. This excessive weight is necessary in order to equalise as far as possible the turning movement of the engine crank, and to damp the effect of the explosion. It will be easily understood that if an engine could be designed in which an explosion would take place every revolution, double the power might be obtained from an engine of a given size, and a more equal turning movement would result.

This end was obtained by Mr. (now Sir) Dugald Clerk in 1886 by his invention of a two-cycle engine, in which he introduced an extra cylinder, the purpose of which was to draw in and compress the charge and to sweep out the burnt gases from the power cylinder by a blast of air. The principle of the Clerk cycle has been embodied in the large gas engines of to-day, some of which have an individual rating of 5,000 h.p., a capacity which it would be difficult to reach in engines of four-cycle type.

Many varieties of gas engines are now available, but practically all follow one or other of the cycles which have been indicated; while the charge of gas and air is ignited in all, either by a small gas flame which is made to enter for an instant into the cylinder, or by an electric spark from a magneto or battery. Various methods of "governing" the engine are adopted; in some the weight and density of the charge is varied, and in others the duration of the period during which the charge is admitted to the cylinder, the duration being extended and more gas admitted as the power required increases.

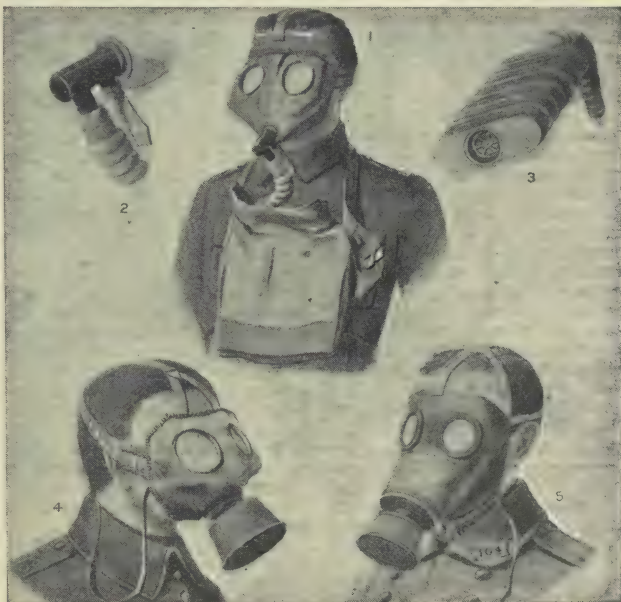
The consumption of coal gas in small engines has been reduced to as little as 24 cubic ft. per brake horse-power hour; on Mond gas, experiments have given a consumption of 66 cubic ft. per brake horse-power hour in an engine developing 750 h.p.; while a full load of 1,200 brake horse-power has been developed with a consumption of 102 cubic ft. of waste



Gas Engine. 1,500 B.H.P. gas engine with rope-drive fly-wheel. Above, seven 600 B.H.P. Cockerill-Westgarth gas-driven blowing engines

peratures reached by the exploded mixture in the engine cylinder of a gas engine it is necessary to cool the walls of the cylinder, and also in large engines the piston, by circulating water around or through them. In the cooling water thus

Gas Helmet. Device for protecting troops against the effects of lethal or irritant gases discharged at them by the enemy. The gas helmet was developed by the Allies during 1915, after the German use of clouds of chlorine



Gas Helmet. 1. Box respirator used in the British army. The wearer inhales through the tube from the box respirator and exhales through the little soft rubber valve shown behind the tube in 2, as no gas can enter through the valve. 3. Tin box containing the chemicals which absorb the gas as the air is inhaled. 4. German, and 5, French gas masks

in the first gas attack at Ypres. It consisted of a flannel bag provided with a mica window, and of sufficient size completely to envelop the wearer's head and be well tucked in round the neck under the tunic. The flannel was treated with a solution of sodium carbonate, which combines with free chlorine and thus purifies the air that passes through.

Subsequently, with the use of phosgene gas by the Germans helmets were impregnated with sodium thiosulphate and sodium phenate, and fitted with a valve through which the exhaled air was blown, making the helmet much more comfortable to wear. The advent of the use of gas shells made it necessary to provide protection against higher concentrations of a much wider range of chemicals, and this could not adequately be done with impregnated fabric, with the result that the box respirator or gas-mask was introduced, but the latest type of gas helmet was retained as the reserve equipment in the British Army.

In the box type respirators, a close-fitting mask on the face is connected by flexible tubing to a box containing the chemicals, and carried on the breast from a strap round the neck. The chemicals are usually consecutive layers of active absorbent charcoal and pumice impregnated with sodium carbonate and hexamethylenetetramine. These will absorb all the gases used up to now. (See Gas.)

Gas helmet is also the name applied to the breathing apparatus used by rescue parties when entering a coal-mine after an explosion. This consists of a head-covering which excludes air, fitted with goggles and a valve through which the exhaled air is blown, and is fed with oxygen carried in the compressed state in small cylinders attached to the shoulders. The gas passes through a reducing valve to lower its pressure, and is mixed with the exhaled air after the latter has been freed from carbonic acid gas by treatment with caustic soda in a separate chamber.

Gaskell, ELIZABETH CLEGHORN (1810-65). British novelist. Born at Chelsea, Sept. 29, 1810, daughter of T. Stevenson, Keeper of Treasury Records, she was brought up at Knutsford, Cheshire, and Stratford-on-Avon. In 1832 she married William Gaskell, a

Unitarian minister and professor of English literature at Manchester. Her first novel, *Mary Barton*, 1848, met with wide success and high praise, and was followed by *Ruth*, 1853, and by her best known work, *Cranford*, 1853, a charming picture of village life founded on her recollections of Knutsford. Other works were *North and South*, 1855, *Sylvia's Lovers*, 1863, several volumes of short stories, and the excellent life of her friend, *Charlotte Brontë*, 1857. Mrs. Gaskell died near Alton, Hants, Nov. 12, 1865, and was buried at Knutsford. See Mrs. Gaskell, C. K. Shorter, 1908; Mrs. Gaskell: *Haunts, Homes, and Stories*, Mrs. Chadwick, 1910.

Gasket. Rope yarn used for making joints in spigot and faucet pipes. The yarn is rammed well into the joint, and melted lead is then poured in and caulked to complete the joint. It is also a cord or rope, of which the ends of the strands are plaited, secured to a ship's yard, to which a sail is fastened. A gasket and eye is formed by looping the end of a rope and plaiting the loose ends.

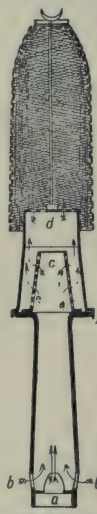
Gas Lighting. The use of gas for illuminating purposes was first practically demonstrated by William Murdock in 1779. It was not for some years, however, that coal gas began to be used to any extent. In 1798 Murdock used gas as an illuminant in a Soho factory, and a few years later he applied it to cotton mills in Manchester. In 1810 the Gas Light and Coke Company was formed; three years later Westminster Bridge was lighted with gas; and its use gradually, though slowly, extended to street and other forms of lighting. The invention of the gas mantle, and the consequent greatly increased light obtained, put gas lighting on a better basis to compete with electric lighting. See Lighting.

Gaslight Paper. Paper, used for printing photographs, of such sensitiveness to light that the exposure behind the negative and the development of the invisible image thus produced can both be done by gaslight or equivalent illumination. The exposure is made a few inches from the light; the development some feet away, and, as a measure of precaution, in shadow. Gaslight paper was introduced in America about 1897. See Photography.

Gas Liquor. Ammoniacal liquor which separates from coal gas in the hydraulic main. The liquid is collected in a well, and contains practically the whole of the ammonia yielded by the coal in the process of distillation. The ammonia is not present in the free

state, but is combined as sulphide, carbonate, chloride, sulphate, cyanide, etc. Sulphuretted hydrogen, phenols, and pyridine are also present in the gas liquor. The liquor is distilled to obtain the ammonia, which is combined with sulphuric acid to form sulphate of ammonia, employed extensively as a fertiliser. See Coal Gas.

Gas Mantle. Device for increasing the illuminating power of coal gas. In 1885 Karl Auer, Baron



Gas Mantle. Diagram illustrating Welsbach-Kern high-pressure mantle gas burner. *a*, gas inlet; *b*, *b'*, air inlets; *c*, gas and air mixer; *d*, burner

von Welsbach, an Austrian scientist who had been studying the rare earths, introduced in Vienna the now well-known gas mantle, which yields from four to five times the amount of light given by the best previous burners for the same consumption of gas. Previous to the invention of the Welsbach burner an attempt had been made to embody something of the same idea in fine platinum wire, but not with any particular success. While various rare earths have been used in the production of gas mantles, the material mostly used to-day is oxide of thorium containing about 1 per cent. of the oxide of ceria.

Gas Manufacture. Gases have become of rapidly increasing importance in modern commerce, and their manufacture on an extensive scale forms a widespread industry. The actual processes of manufacture are dealt with under the respective headings of the gases concerned, e.g. acetylene, carbon dioxide, coal gas, helium, hydrogen, water gas, etc. The manufacture of hydrogen and helium has been given a great impetus during the Great War for filling balloons and airships, and undoubtedly the extended use of giant airships for international and inter-oceanic traffic will result in new methods of production.

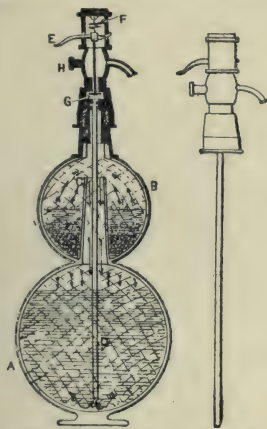
Gas Meter. Instrument for measuring gas. Gas meters are of two kinds, the wet and the dry. The former consists of two cylinders with their axes horizontal and concentric, one arranged to revolve inside the other. The revolving



El Gaskell

cylinder is divided into four compartments and works in water which reaches just above the axle. Gas is admitted into each compartment in succession, and in entering drives the cylinder round and raises the compartment out of the water. The movement is recorded by clockwork actuated by the revolving axle and provided with dials and clock hands which indicate the number of thousand feet of gas consumed in a given time. While this form of meter is retained at the gasworks themselves for recording the amount of gas produced, the dry meter is now more generally used on the premises of consumers. The dry meter consists of a pair of bellows of cylindrical shape filled and emptied alternately by the pressure of the gas itself, the movements being recorded in the same way as the movement of the wet meter.

Gasogene OR SELTZOGENE. Apparatus for charging water with gas, usually carbonic acid gas for

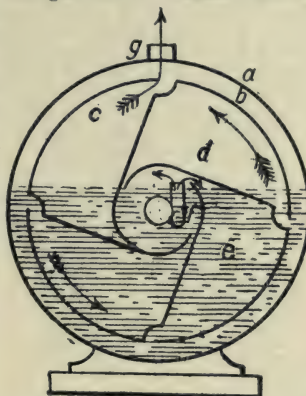


Gasogene. A, water container; B, gas generator; C, tube which permits water from container to be poured upon the salts in the generator; D, tube by which water is withdrawn; E, trigger which opens valve G; F, spring which pulls valve back to its seat; H, finger stud. Head and central tube can be removed as shown

mineral waters. It consists of two glass globes connected by a wide glass tube which runs nearly the whole diameter of the two globes. Another tube leads from a valve on the upper globe through the wide tube to the bottom of the lower globe, which is filled with water.

The upper globe contains a mixture of sodium bicarbonate and tartaric acid, for the production, with water, of carbonic acid gas. When the valve is fastened the apparatus is tilted sufficiently to

allow a little water to enter the upper globe and so begin the production of the gas, which is dissolved by the water under the increased pressure. This form of gasogene has been greatly superseded by the substitution of steel capsules containing carbonic acid gas in a high state of compression. By a needle and valve arrangement the gas can be released into a

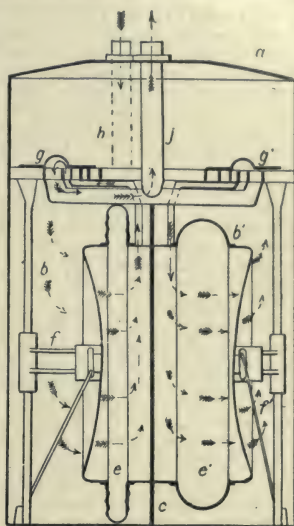


Gas Meter. Below, wet meter: a, casing; b, revolving drum in compartments (arrows show direction of rotation); c, compartment filling with water which is driving out gas; d, compartment just filled with gas; e, compartment beginning to be filled with gas; f, gas inlet; g, gas outlet. Above, dry gas meter: a, casing; b b', measuring compartments divided by diaphragm c; c c', bellows worked by pressure of gas (c is collapsed, and e' is distended, movement then beginning to be reversed); f f', levers attached to bellows, and moving with them to let gas in and out of compartments; g g', valves; h, gas inlet; j, gas outlet

specially constructed vessel containing water, so aerating the latter. See Mineral Waters.

Gasolene OR GASOLINE. One of the products of fractional distillation of petroleum. The refined oil boils at 90° F. to 200° F. according to composition, and is used for burning in vapour lamps, as a fuel in internal combustion motors, and as a solvent for oils and fats. In the latter connexion it is much used for the extraction of oil from oil seeds. See Petroleum.

Gasometer OR GAS HOLDER. Circular water tank in which a circular steel chamber or bell of almost equal diameter and height, closed at the top, is able to rise and fall. Gas is admitted under the bell, which rises when the pressure exceeds a very low minimum. The hydrostatic pressure of the water above the rim of the bell, even when the bell is in its highest position, is sufficient to prevent gas escaping. See Coal Gas.



Gasometry OR GAS ANALYSIS. Special branch of chemical analysis. It is employed not only for estimating the purity of simple gases, but for testing the composition of illuminating gas, the efficiency of pyrites roasting furnaces, and the wholesomeness of the air of dwelling-houses. Carbonic acid gas is absorbed entirely by a fixed caustic alkali such as potassium hydroxide.

Automatic methods have been devised for use by the technical chemist in analysing coal gas. He tests for (1) carbon dioxide; (2) ethylene and benzene; (3) oxygen; (4) carbon monoxide; (5) hydrogen and methane; (6) nitrogen.

A measured quantity of coal gas is passed in turn through (1) potassium hydroxide; (2) bromine or fuming sulphuric acid; (3) an alkaline solution of pyrogallol, sodium hyposulphite, or phosphorus; (4) ammoniacal cuprous chloride, followed by dilute sulphuric acid. These processes remove the first four constituents, and measurement of the changes produced in each case enables the chemist to determine the quantity of each substance in the sample of gas. The remainder of the sample is then tested for hydrogen and methane, either by combustion with oxygen over palladium asbestos or by explosion, and the final residue is nitrogen.

Gasparin, VALÉRIE BOISSIER, COMTESSE DE (1813-94). French writer. Born at Geneva, she married Count Agénor de Gasparin, a French politician prominent in the French Protestant movement, whose views she shared. She wrote a number of books on religious and social themes, notably *Le Mariage au Point de Vue Chrétien*, 1843,

and Il y a des Pauvres à Paris, 1846 (both awarded the French Academy's Montyon prize). Other works are: *Livre pour les femmes mariées*, 1845; *Les Horizons Prochains*, 1858; *Les Horizons Célestes*, 1859, in translations the best known of her books; and *L'Armée du Salut: lisez et jugez*, 1883 (on the work of the Salvation Army). She translated many English works, including some of Dickens, into French. She died at Geneva, June 29, 1894. Her works were widely translated. See *Monographs* (in French) by M. Dutoit, 1901; C. Barbey-Boissier, 1902.

Gaspé. Peninsula forming the eastern part of the prov. of Quebec, Canada. It lies between the St. Lawrence and Chaleur Bay. The interior is forest land and on the coast are a few fishing villages. There are several mountain ranges and the district is well watered, but owing to the great cold it is thinly populated. The name is also borne by a cape and a bay at the eastern end; on the latter is Gaspé Basin, a fishing centre where Jacques Cartier landed July 24, 1534.

Gaspé Sandstone. Siliceous rock containing fossil plants of Devonian age. It is developed in the Gaspé Peninsula, Quebec.

Gas Poisoning. The effects of gas as employed by the Germans in the Great War varied with the type of gas used. In the earlier attacks the gases employed were chlorine and phosgene, which acted mainly by irritating the lungs. Later lachrymal gas was employed. This caused a profuse flow of tears and smarting of the eyes, sometimes so extreme as to prevent the eyes being opened. In July, 1917, the Germans began to use di-chlor-ethyl-sulphide or mustard gas, which caused burning of the tissues.

The immediate symptoms of the lung irritants, of which phosgene may be taken as the type, were pain in the chest, cough, nausea, retching, and vomiting. Oedema of the lung followed, leading to difficulty in breathing. Some cases showed deep cyanosis (blueness of the face and skin). In others the skin was of an ashen, leaden colour, and signs of profound collapse were present. In the fatal cases death was due to suffocation or collapse. In non-fatal cases recovery commenced within 3 days, and the great majority of the sufferers recovered completely.

A certain proportion suffered from prolonged or permanent after-effects. In some cases there have been permanent changes in the lungs and in others disturbance of the functions of the heart, with pain, difficulty in breathing, and

persistently rapid pulse. The administration of oxygen, especially by means of Haldane's apparatus, proved the most efficacious form of treatment. The effects of lachrymal gas and of nasal irritants, such as compounds of arsine, were not so serious, and the symptoms usually disappeared in a short time.

The first effects of mustard gas were to cause smarting and watering of the eyes followed by inflammation of the conjunctiva. There was also running from the nose, followed by nausea, vomiting, and abdominal pain. The throat became dry and burning, and the voice hoarse. Inflammation of the skin occurred in patches in various parts of the body, followed by blistering. The patient was sometimes practically blinded by inflammation and swelling of the eyelids. In severe cases bronchitis or broncho-pneumonia followed, with involvement of the heart, and death from the second or third day to the third or fourth week.

Mustard gas clung to the ground and sometimes rendered a position untenable for as long as a fortnight. It would soak through leggings and even the upper parts of boots, producing severe irritation and burning of the skin. A certain proportion of cases have suffered permanently. Sometimes chronic bronchitis has developed, and in other cases neurasthenia or hysteria has followed.

Gasquet, FRANCIS AIDAN (b. 1846). British cardinal. Born in London, Oct. 5, 1846, and educated at Downside College, Bath, he was ordained priest in 1874, and from 1878-85 was prior of Downside. In 1886 he began that systematic historical research which resulted in such works as *Henry VIII and the English Monasteries*, 1888; *The Last Abbot of Glastonbury*, 1895; *The Eve of the Reformation*, 1900; and *Monastic Life in England*, 1904.

In 1896 he was appointed a member of Pope Leo XIII's commission on Anglican Orders. From 1900-14 he was abbot-president of the English Benedictine Congregation. In 1907 he was appointed president of the commission for the revision of the Vulgate. He was created a cardinal priest, by the title of S. George in Velabro, in May, 1914.

Gassendi, PIERRE (1592-1655). French philosopher and mathematician. Professor of mathematics

at the Royal College, Paris, he endeavoured to reconcile the Epicurean, atomistic, mechanical



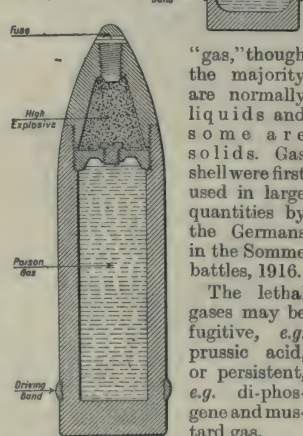
Pierre Gassendi, French philosopher

theory of the origin of things with the doctrines of Christianity. He affirmed the immortality of the soul and the existence of an independent first cause. He wrote many philosophic and controversial works, notably on Epicurus and against Descartes, and on astronomy. He died on Oct. 24, 1655.

Gasserion Ganglion. Mass of nerve cells situated on the fifth nerve inside the skull. It is sometimes removed in cases of severe and intractable trigeminal neuralgia or tic douloureux.

Gas Shell. Projectile for discharge from guns, howitzers, and trench mortars which contains a

charge of some chemical having a lethal or irritant effect on human beings, which is ejected into the atmosphere by the bursting of a small explosive charge on impact of the shell. These chemical fillings are popularly termed



Gas shell with explosive charge in the head. Above, with charge in central tube

"gas," though the majority are normally liquids and some are solids. Gas shells were first used in large quantities by the Germans in the Somme battles, 1916.

The lethal gases may be fugitive, e.g. prussic acid, or persistent, e.g. di-phosgene and mustard gas.

Xylol and benzyl bromides, phenyl-carbonylamine chloride, and chloro-acetone were employed in lachrymatory shells, and

mustard gas also has a lachrymatory effect. Sneezing gas was used in other irritant shell, diphenylchlorarsine being chiefly used. A gas shell consists of two compartments, a small one for the high explosive bursting charge and a large one for the "gas." They are usually fitted with fuses designed to act instantaneously on impact of the projectile. Gas shell are of special importance in trench warfare, as the gas will penetrate into shelters, gun positions, and dug-outs which are quite safe against even direct hits by high explosive shell. *See* Chemical Shell.

Gas Stove. Term properly belonging to apparatus heated by gas, used for the warming of rooms, either through the medium of radiation from surfaces made hot by the gas directly, or from surfaces heated by hot water. It is used in this limited sense in the United States and on the continent of Europe. In this country it is now applied to practically all domestic apparatus in which gas is used for heating or cooking, from a simple "gas ring" to the most elaborate "kitchen" and also to the common gas-heated grate. *See* Cookery; Heaters.

Gas Tar OR **COAL TAR.** Term used for the black, semi-solid substance which is a by-product of the destructive distillation of coal. It is extremely valuable, containing the essential constituents of aniline dyes, oils, etc. *See* Coal Tar; Dyes.

Gastein. Valley and health resort of Austria, in Salzburg. It lies at a height of about 3,000 ft., fine scenery being provided by the two falls of the river Ache which flows through it. There are several villages in the valley, including Hof-Gastein and Wildbad-Gastein. Wildbad, with its famous mineral springs, is the chief resort of visitors, for whose accommodation there are a number of hotels, and boarding houses.

Gastein, CONVENTION OF. Arrangement between Austria and Prussia, Aug. 14, 1865, about the occupation of the duchies of Slesvig-Holstein, and Lauenburg. After the war with Denmark in 1864 these two powers obtained the duchies jointly, but jealousies developed. Austria, supported by a majority in the diet of the German Confederation, wished to make Frederick, duke of Augustenburg, ruler of Holstein. Prussia objected and prepared to build a naval harbour at Kiel, but a compromise was effected at Gastein. By this Prussia became responsible for Slesvig and Austria for Holstein, while the former country secured Lauenburg for a money payment. This convention,

in Bismarck's words, "papered over the cracks," but they soon reappeared, for in 1866 war with Austria broke out.

Gaster, Moses (b. 1856). Rumanian philologist. Born at Bukarest of Jewish parents, and exiled for his advocacy of the cause of his coreligionists, he settled in England, 1885. He holds several important posts in connexion with the Jewish world, and is also president of the Folklore society and vice-president of the Asiatic society. His works include a history of Rumanian Literature in German.

Gasteria. Genus of evergreen succulent plants. Of the natural order Liliaceae, they are allied to the aloe, natives of S. Africa. The leaves are tongue-shaped or sword-shaped, forming a rosette or in two ranks; the flowers tubular, with some shade of red, disposed in long sprays.

Gasteromyceteae (Gr. *gastēr*, stomach, *mykētes*, fungi). Large natural order of fungi of world-wide distribution. The characteristic of the order is that the spore-bearing surface is completely enclosed in a continuous wall (peridium) until the spores are fully developed, when the envelope is ruptured, and the spores set free. It contains the families Phalloideae (stinkhorns), Nidulariaceae (bird's-nest fungi), Lycoperdaceae (puff-balls), etc.

Gastric Catarrh. Inflammation of the lining membrane of the stomach. It may be chronic or acute, and it gives rise to pain, vomiting, and often severe headaches. Acute gastric catarrh is usually caused by excess of eating or the swallowing of unsuitable foods. The cure is simple, that of giving the stomach as complete a rest as possible, either by fasting or the judicious selection of easily digestible foods. *See* Stomach.

Gastric Juice. Fluid secreted by the mucous membrane of the stomach. In the human being it consists of about 99.4 per cent. of water; 3 per cent. of organic substances, chiefly pepsin; 2 per cent. of free hydrochloric acid; 1.4 per cent. of sodium chloride (common salt), and smaller amounts of other salts. The action of gastric juice is fivefold.

(1) It acts as an antiseptic in virtue of its hydrochloric acid, tending to destroy bacteria and prevent putrefactive processes occurring in the stomach. (2) It acts on cane sugar converting it into simpler forms. (3) It curdles milk. (4) It splits fat up into simpler bodies. (5) It converts proteid—the principal nitrogenous constituent of animal food—into pro-

teoses which, after further change into peptones, are absorbed in the process of digestion. *See* Stomach.

Gastritis. Inflammation of the mucous membrane which lines the interior of the stomach. Two forms are recognized, acute and chronic. Acute gastritis is a common complaint most often caused by eating unsound or indigestible food. Children, persons of a gouty tendency, and those addicted to alcoholism are particularly prone to attacks. Irritant poisons may also give rise to acute gastritis.

The symptoms are those of pain and feeling of distension in the stomach, nausea, vomiting, gaseous eructations, and headache. In severe cases there may be a rise of temperature. The tongue is coated, and diarrhoea may follow.

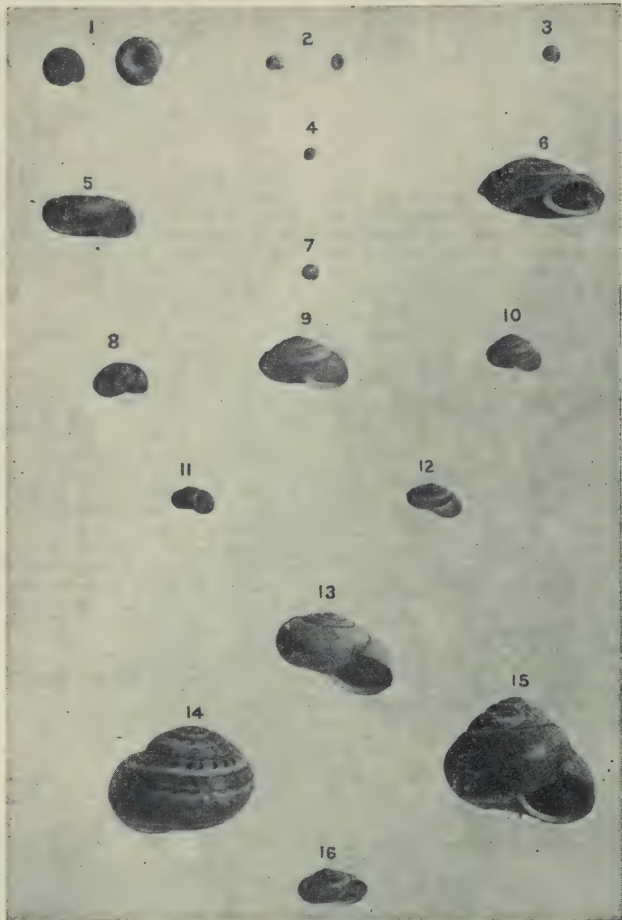
The symptoms generally disappear in from one to three days. Medicinal treatment is simple. In most cases a purgative should be given, castor oil being particularly useful in children. No food should be taken, until the symptoms are abating, and then only the lightest diet, such as milk, or milk and lime-water and a little dry toast.

Chronic gastritis may follow the persistent eating of unsuitable or indigestible food, or excessive taking of tea, coffee, or alcohol, or the habit of hastily taking meals and bolting food which is insufficiently masticated. The condition may also arise in the course of disease of the stomach such as ulcer or cancer, and it is frequently a secondary result of constitutional disorders such as anaemia, gout, diabetes, and tuberculosis.

The symptoms are pain in the stomach and sensations of fullness after eating, nausea often most marked on rising in the morning, flatulence, eructations, headache, depression, and lassitude. In prolonged cases there may be marked emaciation. Treatment consists in careful dieting and allowing plenty of time for meals. It is often desirable to drink only between meals and not with meals. Alcohol should be avoided, and the taking of tea reduced to the minimum.

Gastrochaena. Genus of marine bivalve molluscs, boring into limestone and sandstone rocks. They secrete a kind of tube, shaped somewhat like a flask, which is usually coated with grains of sand. Only one species occurs round the British coasts, the flask-shell (*G. dubia*).

Gastrocnemius (Gr. *gastēr*, stomach; *knēmē*, leg). Muscle which forms the main part of the calf of the leg. It consists in the upper part of two fleshy masses, one springing from the outer side of



Gastropoda. 1. Rounded snail, *Helix rotundata*. 2. Beautiful snail, *H. pulchella*. 3. Rocks snail, *H. rupestris*. 4. Prickly snail, *H. aculeata*. 5. Cheese snail, *H. obvaluta*. 6. Lapidary snail, *H. lapicida*. 7. Plated snail, *H. lamellata*. 8. Bristly snail, *H. hispidus*. 9. Ruddy snail, *H. rufescens*. 10. Silky snail, *H. granulata*. 11. Green hairy snail, *H. revelata*. 12. Dusky snail, *H. fusca*. 13. Kentish snail, *H. cantiana*. 14. Sandhill snail, *H. pisana*. 15. Copse snail, *H. arbustorum*. 16. Carthusian snail, *H. carthusiana*.

the end of the femur and the other from the inner side. These heads of the muscle gradually meet as they pass down the leg, and terminate in a broad tendinous band which is continued as a strong tendon, the tendo Achilles. See Tendon of Achilles.

Gastro-enteritis. Inflammation of the stomach and intestines. See Enteritis.

Gastropoda (Gr. *gaster*, stomach; stem *pod*, foot). One of the great divisions of the sub-kingdom Mollusca. It includes those molluscs which have the ventral or under side of the body developed in a gliding base. Gastropods may be roughly defined as comprising snails and slugs, terrestrial, fresh-water, and marine. The whelk is a familiar

example of a marine gastropod. The underside of a gastropod is its organ of locomotion, and its mode of action may be seen by watching a land snail crawl on the window-pane, or a pond snail on the glass front of an aquarium. The body is slowly propelled forwards by a peculiar ripple or wave-like movement of the foot.

The body, which lies above the foot, consists of a well-defined head and a visceral hump, covered by an outer glandular layer known as the mantle. In slugs this hump is not very noticeable, but in snails it is long and coiled, and protected by a shell usually more or less conical in form. This visceral hump contains most of the internal organs. During development the

internal organs of a gastropod undergo a kind of torsion or twisting, the result of which is to bring the posterior termination of the alimentary canal towards the head and the left-hand organs to the right. The nerve loop which involves the visceral organs thus becomes twisted into a figure of eight. The original left-hand organs, now on the right side, become atrophied, the result being that the internal arrangements of a gastropod are not symmetrical, and there is only one kidney, one gill, and one auricle to the heart.

Another interesting feature is the odontophore or lingual ribbon, situated at the back of the mouth. This is a long, horny band, called the radula, studded with a vast number of minute teeth. When a gastropod is feeding the substance is seized by the jaw, and the radula moves backwards and forwards like a rasp, and scrapes off minute particles which pass into the stomach.

Gastropods are divided into two sub-divisions: the Streptoneura, in which the twisting is well marked, and the Euthyneura, in which the visceral hump appears to be partly untwisted. The first sub-division contains two orders: the Aspidobranchia, which have flattened leaf-like gill filaments, and the Pectinibranchia, in which the gill filaments are elongated. The second sub-division is also subdivided into two orders: the Opisthobranchia, in which the heart is placed in front of the gills, and the Pulmonata, in which the gills are absent and the mantle cavity serves as a kind of lung. Most land and fresh-water gastropods belong to this order.

Economically, certain marine gastropods are of value as food for man, as the whelk and periwinkle; and several species of land snails are consumed on the Continent, and to a small extent in Great Britain. Some aquatic gastropods do useful work as scavengers, while many of the terrestrial ones do great mischief in gardens by eating the plants. (See Snail.)

Fossilised remains are found throughout the stratified rocks. Air-breathing forms were first met with in Devonian rocks, while fresh-water snails were first found in Purbeck rocks, of much later age. See Mollusca.

Bibliography. Proceedings of the Malacological Society of London, ed. B. E. Woodward, 1893, etc.; Monograph of the Land and Fresh-water Mollusca of the British Isles, John William Taylor, 1894, etc.; Shell Life, E. Step, 1901; The Life of the Mollusca, B. B. Woodward, 1913.

Gastrostomy (Gr. *gastēr*, stomach; *stoma*, mouth). Operation of making a permanent artificial opening into the stomach through which food can be administered. It is performed when there is a stricture or obstruction of the gullet, as, for instance, by malignant disease, which prevents food from being swallowed. Gastrostomy is the operation of opening the stomach. **Gastrorectomy** is the operation of removing the stomach. *See Stomach.*

Gastrula. Stage in the development of a multi-cellular organism. The single egg-cell develops by segmentation into a hollow ball of cells; one side of the ball next becomes indented, much as an indiarubber ball may be dimpled, and a thimble-shaped organism results. This is called the gastrula, and is very important as establishing an inner and outer germinal layer. In other words, it is the first hint of an organism containing a body cavity. *See Embryology.*

Gas Works. Establishments for the production of gas. Gas works are now of two classes: first, the familiar establishments where domestic gas is manufactured, and, secondly, works where gas is produced specially for use in metallurgical operations and for the development of power; works of the latter class are also styled gas-power stations.

Apart from the mechanical appliances for the handling of the coal and other materials, the plant of a gas works consists of the following elements. First the retorts, long vessels of cylindrical or D-shape cross-section, usually made

of fireclay, in which the coal is carbonised and the gas, with other volatile products, driven out of it. These were formerly fixed horizontally in "benches" of six to nine retorts; more recently inclined retorts have been introduced, while the most modern plants have the retorts placed vertically, the coal being introduced at the top and the coke removed from the bottom by mechanical appliances, the heavy labour of charging the horizontal form by hand being thus eliminated. Secondly, the hydraulic main, which is a large pipe running across the tops of the benches of retorts, and is normally partly filled with tar and ammoniacal liquor. A dip pipe connected by a bridge pipe with an ascension pipe from each retort has its outlet just under the level of the liquor in the main, so that the gas from the retort will bubble through the liquor into the upper part of the main.

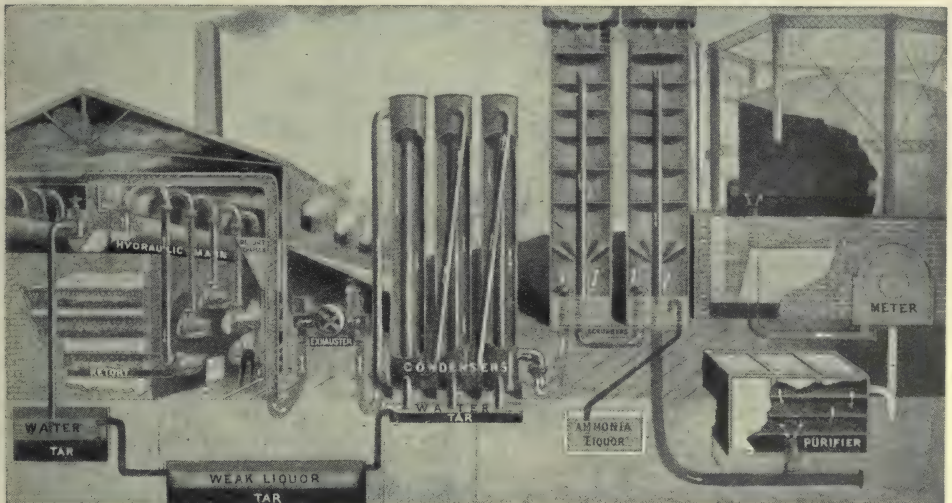
From the main the gas passes through a "condenser," usually of cast-iron pipes, where it is cooled, and most of the tar and water which it holds at this stage thrown down. Scrubbers or washers to extract ammonia and purifiers to remove sulphur and other impurities succeed the condensers. Finally, the gas is driven by a fan or exhauster into the familiar gas-holder or gasometer, passing on its way through station meters which record the volume. An important section of many modern gas works is represented by the water gas plant, in which a mixture of hydrogen and carbonic oxide is produced by passing steam through

incandescent coke; this section being generally supplemented by an "oil gas" plant in which some form of crude oil is more or less gasified and mixed with the water gas to form carburetted water gas, the mixed product so produced being used to supplement the heating and lighting power of otherwise poor coal gas.

Gas works also contain a considerable number of other auxiliary plant, particularly in connexion with the recovery of by-products. *See Coal Gas; Coal Tar.*

Gata. SIERRA DE. Mt. range of Spain. Lying between the provs. of Cáceres and Salamanca, it is an extension of the Guadarramas on the E., their W. continuation in Portugal being known as the Serra da Estrella. The maximum elevation is 5,695 ft.

Gate. Movable barrier in an enclosing wall or fence to permit ingress and egress. The principal material for gates is wood or metal, or their combinations. The utilitarian and military value of gates was recognized as soon as man began to raise fortified walls round his towns or encampments; they were part of the defensive system of every age. City gates were largely employed by the Romans, and during the empire they became much more ornamental, though they did not lose their military character. The monumental gateways of Rome had two passages, one for entrance and another for egress, and occasionally side passages for pedestrians only. These were flanked by towers, square or circular, and their summits were machicolated.



Gas Works. Diagram illustrating the arrangement of gas works, showing the course of the gas from the retorts through condensers, scrubbers, and purifiers to the gasometer, and the collection of tar and ammonia by-products

In the Middle Ages this treatment of gateways was maintained, and extended to feudal castles; bridges were fortified at both ends by powerful gateways; there was frequently a third gate in the middle of the bridge, where toll was exacted. Architecturally, they conformed to the prevailing Gothic style. The 14th century gate at Dinan and the contemporary Porte Guillaume at Chartres may be cited. More modern gateways call for no special remark, but much beautiful ironwork was lavished on gates in the 18th century, the military use of the gateway having then disappeared.

Gatehouse. Structure above and on each side of a gateway. It was used to guard the solid bridge or drawbridge that gave access to the medieval castle or fortified manor house. The Gatehouse of Westminster was built in 1370 by Walter de Warfield within the precincts of the abbey on a site now occupied by the Crimean Memorial. Used as a prison by Whitgift in connexion with the eccles. courts, and by the Star Chamber, it was here that Sir Walter Raleigh spent the night before his execution and that Sir John Eliot, the poets Lovelace and Savage, and many other eminent men, were incarcerated. After serving as a debtors' prison the Gatehouse was demolished in 1776, but one of its walls remained until 1836. See Westminster.

Gate-legged Table. Tables with two flap leaves which, when raised, are supported by a frame-



Gate-legged Table of oak with the flaps raised

By courtesy of Waring & Gillow

work consisting of two perpendicular legs, joined by two horizontal bars, somewhat resembling a gate, hinged to the main framework of the table. They were introduced in England soon after the Restoration, and retain their popularity.

Gates, HORATIO (1728-1806). American soldier. Born at Maldon, Essex, he took part in Braddock's expedition against Fort Duquesne, and settled in Virginia until the outbreak of the War of Independence, when he joined the colonists. He was chiefly responsible for the operations which led up to Burgoyne's surrender at Saratoga,



Horatio Gates, American soldier

1777, though Schuyler and Arnold also deserve credit. Elated by this success, he seems to have entertained the idea of ousting Washington from his command. After a period of retirement he took the field again to oppose Cornwallis's invasion of the Central States, but a complete defeat at Camden, 1780, ended his military career. He died at New York, April 10, 1806.



Gatehouse, Westminster, before its demolition in 1776

From an old print

Gateshead. County bor. and seaport of Durham, England. It stands on the S. bank of the Tyne,

opposite Newcastle, on the main line of the N.E.R. The chief buildings are the cruciform church of S. Mary, a 15th century edifice, rebuilt in the 18th, the town hall, erected in 1868, the English Renaissance style, and the Shipley Gallery, a classical building containing a fine collection of pictures, the gift of Joseph A. D. Shipley. The town also possesses a secondary school, mechanics' institute, Abbot memorial industrial school, children's hospital, and nurses' home and dispensary, while

the corporation maintains an asylum, swimming baths, hospital for infectious diseases, cemeteries, an art gallery, and recreation grounds. Among the recreation grounds are Saltwell Park (52 acres), with a fine sheet of water; Windmill Recreation Grounds (11½ acres); Tyne Vale Park (1½ acres); and the Sunderland Recreation Ground (2 acres).

The industries resemble those of Newcastle and include shipbuilding, iron and engineering works, and the making of glass and chemicals. The N.E.R. has large shops in the town. There is some shipping, coal being exported. The town has a service of electric

trams, while four bridges (one a swing bridge) span the river. In the vicinity, on the river Team, are Ravensworth, opposite Gateshead Fell; Stella Hall, an Elizabethan mansion; and the ruins of Prudhoe Castle.

Gateshead is an ancient town, and in Roman times was called Gabro-stentum. At the Conquest it was a place of importance. Bishop Walcher, a native of Lorraine, made a bishop by the

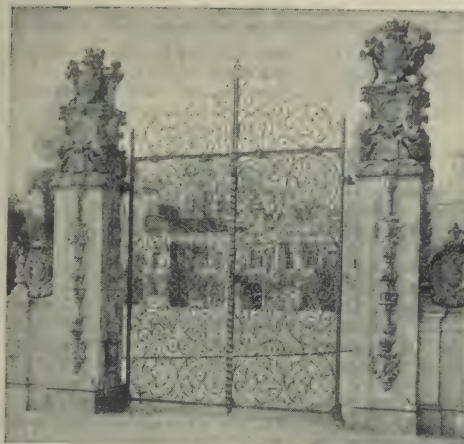
Conqueror, was murdered here in the 11th century. The town's first charter dates from 1164, and it was incorporated in 1661. It was then, as it had been since Norman times, under the authority of the bishop of Durham. It became a parl. bor. under the Reform Act of 1832, a mun. bor. in 1835, and a co. bor. in 1889. One member is returned to Parliament, and it is governed by a mayor and corporation. Pop. (1921) 124,514.



Gateshead arms
public library,



Gateshead, Durham. The town hall, built in 1868

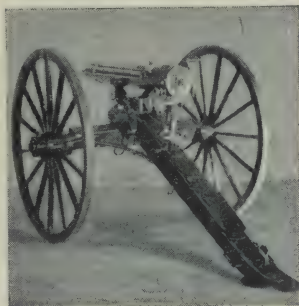


1. Gateway at south entrance of Castle Ashby, Northamptonshire, built in 1865. 2. West forecourt gate of Belton House, near Grantham, example of 17th century work. 3. The Old Gateway, designed by Inigo Jones, at Keevil Manor, Wilts. 4. Kitchen garden gate at Barn Hall, Beaconsfield. 5. Gateway of

the Palazzo dei Diamanti, Ferrara, early 16th century, showing facet-like stones which give the palace its name. 6. Late 15th century gateway and bridge at Ightham Mote, Kent. 7. The Cantimpre Gate, Cambrai, showing slots for the beams which raise the drawbridge

GATE: TYPES OF ORNAMENTAL AND FORTIFIED GATEWAYS, MEDIEVAL AND MODERN

1, 2, and 3 by courtesy of *Country Life*



Gatling Gun of '3-in. calibre on trail mounting

Gath (Heb., wine-press). One of the chief cities of the Philistines, the site of which is uncertain. It stood on the borders of Judah and was famed as the birthplace of Goliath. At one time it was under the rule of the Egyptian kings, and at another had kings of its own, for it was with Achish, king of Gath, that David took refuge. It was conquered by Sargon, king of Assyria. Still existing in the Middle Ages, it was fortified by the Crusaders, captured by Saladin in 1191, and retaken the next year.

Gatineau. River of Quebec, Canada. It rises in some lakes in the northern part of the prov., and flows almost due S. until it joins the Ottawa near Ottawa. Its length is 240 m.

Gatling, RICHARD JORDAN (1818-1903). American inventor. Born in N. Carolina, Sept. 12, 1818, he

became a doctor, but never practised. He invented the revolving machine gun known by his name. He also invented a hemp-breaking machine and a steam

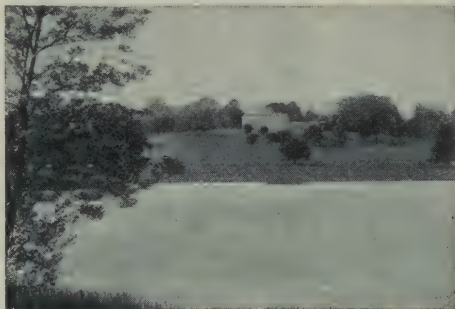
plough. He died Feb. 26, 1903.



Richard J. Gatling, American inventor

Gatling Gun. Machine gun invented by R. J. Gatling, of Chicago, in 1862. It belongs to the class known as non-automatic, since the operations of feeding cartridges, firing and ejecting shells are effected by the operation of a crank by the operator, and not by the force of the explosion or recoil. It had six barrels mounted round a central axis, and behind these was the reloading mechanism, consisting of a cylinder containing the machinery, worked by a crank handle at the side. The cartridges were placed in a feeding box on the top, and fell by gravity into the gun as each shot was fired.

When the handle was turned the six barrels and mechanism revolved round the axis, and a cartridge, dropping into the gun, was pushed into the barrel which at that moment was at the top, being pushed home as the barrel travelled to the



Gatton, Surrey. The House and a stretch of the magnificent park

Frith

lowest position, at which point the shot was fired. Completing the revolution, the cartridge case was ejected as the barrel rose, the latter being empty by the time it reached the top and ready to receive another cartridge. The weight of the gun and mounting prevented any recoil, and the barrels were cooled by a water jacket extending about half their length. These guns

were adopted by the British army and navy in 1871, but soon after the S. African War they were superseded by automatic machine guns of the Maxim and other types, which gave a quicker rate of fire and were worked with less difficulty. See Artillery; Gun; Machine Gun.

Gatshina. Town of Russia, in the govt. of Petrograd. It is 30 m. S.W. of Petrograd, on a lake formed by the Izhora and on the Petrograd-Warsaw-Riga rlys. The imperial palace was the favourite residence of the tsars Paul I and Alexander III. Originally a farm, it was presented by Catherine II to Prince Orloff, who built the château and laid out the park in 1776. It is now a popular summer resort. Pop. 14,740.

Gatton. Parish and village of Surrey, England. It is 2 m. N.E. of Reigate. It was formerly a rotten borough, returning two members to Parliament. The small town hall still stands. Gatton Park is well wooded and is crossed by the Pilgrims' Way. Gatton House was built in magnificent fashion by Lord Monson, a great deal of coloured marble being used in its construction. In the church are magnificent wood carvings from Belgium and Nuremberg, fine stained glass from Aerschot, and other beautiful Continental details. Pop. 236.

Gatún. Town of Panama, in the Panama Canal zone, belonging to the U.S.A. It stands at the confluence of the rivers Gatún and Chagres, 7 m. by rly. S. of Colon on the Atlantic coast. Here are locks and a dam, part of the canal works. The dam is about $\frac{1}{4}$ m. long by



Gatshina, Russia. The former imperial palace, built by Prince Orloff, 1776-81



Gatún, Panama Canal. The lower and middle locks, looking towards the Atlantic

2,100 ft. wide at the base; the crest is 115 ft. above sea level and 21 ft. above the normal level of Lake Gatún, and 100 ft. wide.

Gatwick. Racecourse in Surrey. It is 6 m. from Reigate, and several meetings are held here during the year. There is a station on the L.B. & S.C. Rly., but it is only open during the meetings.

Gau. Old Teutonic word meaning district. In the old Germanic state it comprised several villages, united for judicial and military purposes, under the control of a count (*Gaugraf*), and corresponded to the English shire or county. It lost its political meaning in the 12th century, but the name survives in Aargau, Thurgau, Oberammargau, etc. See County.

Gauchet, VICE-ADMIRAL (b. 1855). French sailor. Having entered the French navy, he became a gun-



nery specialist. When in command of a battleship division, with his flag in the *Mirabeau*, he organized on improved lines the gunnery practice of his ships, and paid special attention to the development of firing at long ranges. In 1914 he was appointed a member of the naval board, being responsible for the construction and ordnance of the fleet. He succeeded Admiral du Fournet (*q.v.*) in the Levant command, Oct., 1915, and in Dec., 1916, became commander of the Allied fleet in the Mediterranean.

Gauche Wood. Wood of France, in the dept. of Nord. It is 1½ m. S. of Gonnelieu and slightly S.E. of Gouzeaucourt (*q.v.*). It was conspicuous in the fighting around Cambrai in the Great War. Captured by the British in April, 1917, it was recaptured by the Germans, Dec., 1917, but was immediately regained by the British after severe fighting. It was the scene of a great stand by the British, March 21, 1918, in the German offensive towards Amiens, the British retiring from it on March 26, 1918. It was finally recovered by the British 17th division in Sept., 1918. See Cambrai, Battles of.

Gauchos (Araucanian, friends). Natives of Spanish paternity in Uruguay and the Argentine pampas. One strain claimed descent from the Spanish conquistadores modified in their native environment. Another is largely mixed with Guaycuru blood in Uruguay, with Araucanian on the pampas. Daring



Gatwick. Part of the racecourse and the grand stand

horsemen, wielding bola and lasso, they were nomad cattlemen, distinguishable from the Pampas Indians. *Pron.* Gow-chōse. See Argentina; Brazil; Chile, illus.

Gaudeamus. Title and first word of an old German students' song in dog-Latin. The theme of it is "let us rejoice while we are young" (*Gaudeamus . . . juvenes*). It is also the title of a collection of students' and school songs by John Farmer, 1890, and is included in the Scottish Students' Song-book.

Gauden, JOHN (1605-62). English author and bishop. Educated at S. John's College, Cambridge, he became dean of Bocking in 1641, having parliamentary sympathies, which later events modified. He published several defences of the Church during the Commonwealth, and was made bishop of Exeter in Nov., 1660, being translated to Worcester, 1662. He died May 23, 1662. He is remembered as claimant to the authorship of *Eikon Basilike* (*q.v.*), a controversial point still undecided.

Gaugamela, BATTLE OF. Alternative name for the battle of Arbela (*q.v.*).

Gauge OR GAGE. Term used for various types of measuring instruments, *e.g.* water gauge, pressure gauge, wire gauge, and also as a standard, *e.g.* railway gauge.

There is a great variety of gauges, many of which are fully described under their various headings. Among them are wire gauges, used for the measurement of the external diameters of wires, certain of which, *e.g.* the Birmingham wire gauge, have become standard in Great Britain; a marking gauge, a tool used by carpenters for scribing a line parallel to the edge of a piece of wood, etc.; rain gauges, used for measuring the rainfall; and water and steam pressure gauges attached to steam boilers, enabling the engineer to ascertain the quantity of water in the boiler and the head of steam. Railway gauge is the width between the lines of a railroad. In Great Britain and most countries of Europe, Canada, and the U.S.A., the standard gauge is 4 ft. 8½ ins. A gauge

greater than this is called a broad gauge, one smaller a narrow gauge.

The term gauge is also used in a nautical sense for the relative positions of two vessels and the wind. A vessel is said to have the weather gauge of another vessel when on the windward side of it, and the lee gauge when on the lee side. In Scotland the term gauger is used for an exiseman, *i.e.* one who gauges or measures the contents of casks. See Pressure Gauge; Railways; Steam Gauge; Water Gauge.

Gauguin, PAUL (1848-1903). French painter. Born in Paris, he was virtually self-trained, declaring that schools and study of old masters warped the artist's vision. Wearying of European life, he spent his last years in the island of Tahiti, and died on Dominica, one of the Antilles. His impressionist paintings, marked by a vivid sense of decorative colour and by striking composition, are both characteristic of the man and effective representations of his subjects. Highly valued by collectors, they have greatly influenced contemporary painting.

Gauhati OR GOWHATTY. Town of Assam, India, capital of the Kamrup district. Standing on the S. bank of the Brahmaputra, 70 m. E. of Goalpara, it is the largest town in Assam and an important centre of the river trade. The temple of Kamakhya, which stands on an eminence in the neighbourhood, and the rocky islet of Umananda in the Brahmaputra, are places of Hindu pilgrimage. Formerly the Hindu capital of Kamrup, many ruined temples and quaintly carved slabs found on both sides of the river attest its former greatness. There is a high school and a Persian school here. Down to 1874 Gauhati was the headquarters of the British administration, afterwards transferred to Shillong. Pop. about 10,000.

Gaul. Old name for France. It is derived from Gallia, the name given to that country by its Roman conquerors. This Gaul was somewhat larger than the modern France, as it included Belgium and parts of Germany, Holland, and

Switzerland. There was also what was called Gallia Cisalpina, or northern Italy. Gaul was conquered by Julius Caesar and organized under Augustus and Tiberius. Its inhabitants were mainly Celts. See France.

Gaulois. French battleship. She was torpedoed and sunk in the Aegean Sea, Dec. 27, 1916. She dated from 1896, displaced 11,260 tons, and had engines of 14,500 horse-power, with a speed of 18 knots.

Gault. Soft, bluish clay of Cretaceous age. It occurs between Lower and Upper Greensand in the south of England. It is used in the manufacture of bricks and tiles.

Gaultheria. Volatile oil used in medicine for the treatment of muscular rheumatism. See Wintergreen.

Gaunt. English variant of Ghent. It is chiefly known because borne by John of Gaunt, duke of Lancaster, who was born at Ghent. See Lancaster, Duke of.

Gaunt, Sir ERNEST FREDERICK AUGUSTUS (b. 1865). British sailor. Born March 25, 1865, he joined the navy in 1878, was first commissioner for Wei-hai-wei, and administrator of Liu-kung-tao, 1898-99, and distinguished himself in the suppression of Boxer rising in China, and in operations in Somaliland, 1903. Rear-admiral 1st battle squadron, battle of Jutland, he was commander-in-chief East Indies, 1917-18, and of the Western Approaches 1921-22. He was knighted in 1919.

Gauntlet (Fr. *gantelet*, little glove). In armour, a glove of leather covered with scale-work or overlapping metal plates which permitted the hand to close. It was originally made without separate fingers, and with a metal extension over the wrist. Throwing down a gauntlet was a recognized form of challenge which survives as part of the British coronation ceremonial.

Running the gauntlet was a former mode of punishment in which the offender ran between two rows of men armed with sticks or ropes, receiving a blow from each. Gauntlet here is a corruption of the Swed. *galloppe*, lane-run, first anglicised as gallop. See Armour; Challenge.

Gaur or **Gour** (*Bos gaurus*). Species of large, wild cattle. Found in great herds in the forests of India and Burma, they are black in colour, with prominent ears and flattened horns; and often as much as 6 ft. high at the withers.

Gauss. Unit of measurement of the intensity or flux density of a magnetic field. A gauss is the measure of the intensity produced by one weber, i.e. one absolute line of force passing at right angles through an area of one square centimetre.

Gauss, KARL FRIEDRICH (1777-1855). German mathematician.

Born in Brunswick, April 30, 1777, the son of a bricklayer, he was educated by the reigning duke of Brunswick. Many of his discoveries of the theory of numbers were made while still a student at Göttingen. His calculation of the elements of the newly discovered planet Ceres placed him in the highest rank of theoretical astronomers as well as of arithmeticians. Made director of the Göttingen observatory, 1807, he died there Feb. 23, 1855.

Gaussberg. Mountain mass of Kaiser Wilhelm II Land, Antarctica. It has an alt. of 1,148 ft., and was discovered by the explorer Drygalski in 1902 and surveyed by the Mawson Expedition, Nov. 22, 1912. It lies between lat. 67° S.



Gauntlet. Left, specimens of Italian work, early 16th century. Right, mitten gauntlets, German 16th century

Wallace Collection, London

and the Antarctic circle, long. 89° E.

Gaussen, FRANÇOIS SAMUEL ROBERT LOUIS (1790-1863). Swiss Protestant theologian. He became pastor of the Swiss Reformed church at Satigny, but was deposed in 1832. In that year he helped to found the evangelical society, and was professor of theology in a new college at Geneva, 1836-1857. He died June 18, 1863. His works included Theopneustics and Canon of Scripture.

Gautama (c. 560-480 B.C.). Name of Buddha, founder of Buddhism (q.v.).

Gautier, THÉOPHILE (1811-72). French author. Born at Tarbes, Aug. 31, 1811, and admitted young to Hugo's circle, he was an enthusiastic supporter of the master in the "battle of Hernani," and later gained further notoriety with two brilliant but licentious romances, Albertus, 1830, in verse, and Mlle. de Maupin, 1835, in prose. Though compelled to give much of his energy to journalism, his work in literature was voluminous and varied. In verse his principal volumes are *La Comédie de la Mort*, 1838, and *Émaux et Camées*, 1852. His prose includes many tales and stories (e.g. *Fortunio*, 1838, and *Jettatura*, 1857); a remarkable piece of archaeological fiction, *Le Roman de la Momie*, 1856; *Le Capitaine Fracasse*, 1863, a dashing historical novel of adventure; some picturesque records of travel; the charming semi-autobiographical *Paradis des Chats* (published in *Le Figaro*) and *Ménagerie Intime*, 1869; and numerous

volumes on the history of literature and art (*Les Grotesques*, 1844; *L'histoire de l'Art Théâtral en France depuis 25 Ans*, 1860; and the posthumous *L'histoire du Romantisme*).

Gautier early outgrew his extreme romanticism, the extravagances of which he satirised in *Les Jeunes-France*, 1833; and in his poetry, in opposition to the prevailing mode, he sought to paint pictures rather than to analyse and express his personal emotions. Unlike most of the romantics, too, he was utterly indifferent to all philosophical and social interests. He died Oct. 23, 1872.

Gautier's daughter Judith, who died in 1917, wrote historical novels and poetry, and was a distinguished Oriental scholar. She collaborated with Pierre Loti in the play *La Fille du Ciel*, 1912.

Bibliography. Works, Eng. trans. ed. F. C. de Sumichrast, 1900, etc.; Théophile Gautier: entretiens, souvenirs et correspondance, E. Bergerat, 1879; French Poets and Novelists, Henry James, repr. 1884; Théophile Gautier: Critical biography, Maxime Du Camp, Eng. trans. J. E. Gordon, 1893.



Théophile Gautier

Gauze. Thin, transparent fabric of silk or cotton, and either plain or figured. True gauze is woven in a distinctive manner. Adjoining warp threads are crossed over each other by the action of a special harness in the loom. Spitalfields and, later, Paisley were long noted for their silk gauze manufactures. The word is possibly derived from Gaza, in Palestine, whence it was first introduced.

Gavarni (1804-66). French caricaturist. He was born in Paris, Jan. 13, 1804, his real name being Guil-



Gavarni,
French caricaturist

laume Sulpice Chevalier. He adopted the pseudonym of Gavarni from the village of Gavarnie, Hautes-Pyrénées, of which he showed a drawing at the Salon, 1829. Settling in Paris, he soon became well known for his elegant drawings of fashionable women in *La Mode*, started in 1830 by Émile de Girardin. Joining the staff of *Charivari*, however, he disclosed his remarkable talent for caricature.

In 1849 he visited England, producing Gavarni in London for *The Illustrated London News*, and his lithograph, *The Highland Piper*, his masterpiece in this style. He died at Auteuil, Nov. 24, 1866. He illustrated Eugène Sue's *The Wandering Jew*, Balzac's novels, and other books.

Gavarnie. Village of France, in dept. of Hautes-Pyrénées. Lying 12 m. S. of Luz-S. Saureur, it is famed for the vast *cirque* of Gavarnie, a mountainous amphitheatre with a cascade 1,515 ft. in height.



Gavarnie, France. Part of the
Cirque, showing the cascade 1,515 ft.
in height

Gavelkind (A.S. *gafol*, tribute, *cynd*, kind). English name for a form of land tenure found in Kent and sometimes elsewhere. Its main feature is that in cases of intestacy the land passes to all the sons equally. This form of tenure is and has been common outside England, and was customary in the country before the Norman Conquest. Land held in gavelkind could be disposed of by will, and was not forfeited by treason. The widow's dower is one-half, not one-third. One theory is that William the Conqueror granted this privilege to the people of Kent in return for their valour. See *Land Laws*; *Primogeniture*.

Gaveston, PIERES (d. 1312). Favourite and foster-brother of Edward II of England. Son of a Gascon knight, he gained complete ascendancy over the young prince, but his insolence having alienated the great barons he was banished by Edward I. On Edward II's accession in 1307 he was recalled and created earl of Cornwall, and in 1308 was appointed regent during his patron's absence in France. After acting as lieutenant of Ireland he was again compelled to leave the kingdom. In 1311 he returned to England, and in 1312 surrendered at Scarborough, was seized by the earl of Warwick, and beheaded on Blacklow Hill, near Warwick, June 17, 1312.

Gavial OR GHARIAL. Member of the crocodile family, distinguished from the others by its very long and slender snout. It is common in India, where it sometimes attains a length of twenty feet, and lives in the larger rivers. It feeds upon fish, and is rarely known to attack land animals, which may possibly be the reason why certain Hindu sects regard it as sacred. Remains belonging to this family have been found in Tertiary deposits.

Gavotte (Fr.). Graceful old dance in duple time, beginning on the second half of the bar. Many examples are to be found in the suites (*q.v.*) of Bach and other 18th century composers. There are often two gavottes, the first one to be played again after the second. Sometimes the second gavotte is



Gavotte. One of the graceful steps in the courtly dance of the 16th and 17th centuries

called a *musette* (*q.v.*). Gavotte was the dance of the Gavots—or people of the Pays de Gap. It was danced at the French Court in the 16th century and was more than once altered to suit new ideas.

Gavrelle. Village of France, in the dept. of Pas-de-Calais. It is on the Arras-Douai road, 9 m. N.E. of Arras. Fierce fighting took place here between the British and Germans, April 23-26, 1917, it being an important position on the N. side of the Scarpe between Roueux and Oppy (*q.v.*). It was retaken by the Germans in March, 1918, and recovered by the British in Aug., 1918. See Arras, Battles of.

Gawaine, SIR. One of the Knights of the Round Table in the Arthurian legend. He was the son of King Lot of Orkney, and nephew of King Arthur. He inadvertently slew a woman early in his knight-hood, and was thereafter bound to fight in woman's quarrels.

Gawler. Town of S. Australia. It is 23 m. N.E. of Adelaide, and the centre of a wheat and vine growing area, yielding also gold, silver, lead, and copper. It contains engineering works and foundries, flour mills, and breweries. Pop. 4,037.

Gawsworth. Village of Cheshire, England. It is 3 m. S.W. of Macclesfield, and formed part of the estate of Gawsworth and Bosworth, belonging to the earl of Harrington, sold by public auction at Macclesfield, Jan. 28, 1920, for nearly £250,000.

The ruins of the Old Hall, a building dating from the 14th



Gawsworth, Cheshire. Tombs of members of the Fytton family in the parish church

century, and for over 400 years the home of the Fytton or Fitton family, were not included in the sale. The New Hall, erected by Lord Mohun, was withdrawn. Gawsworth Church, the older parts of which are attributed to the 11th century, was restored in 1851, and an appeal was made for its further renovation in 1920. It contains many monuments of the Fytton family. See Fytton; Dark Lady of the Sonnets.

GAY, JOHN (1685-1732). English poet and dramatist. Born in Devonshire, he began life as a silk



John Gay, English poet

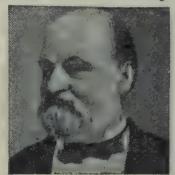
mercant, but forsook business for literature. His first real success was a pastoral, *Shepherd's Week*, 1714, written at the suggestion of Pope, to whom he had dedicated a previous effort. This was followed by *Trivia*, 1716, a description of the moving panorama of the London streets, and by his *Fables*, 1727, which were a notable success. His best work, however, is *The Beggar's Opera*, 1728, a lyrical drama of thieves and highwaymen. It had a great vogue, and Gay followed it up with a sequel, *Polly*, which, on account of its political references, was prohibited; but it was published in book form, 1729.

Among other pieces from Gay's pen was the well-known song *Black-eyed Susan*. Gay was a great social favourite. The last years of his life were spent in the household of his friends the duke and duchess of Queensberry, and he died on Dec. 4, 1732. Gay wrote with grace and distinction the artificial verse of the period, but he sometimes shows a true feeling for nature. The *Beggar's Opera* was successfully revived at the Lyric Theatre, Hammersmith, in 1920. ζ

Gaya. Town and district of India. In Bihar and Orissa, its area is 4,712 sq. m. Gaya is notable for its many associations with the ancient religion of Buddha. Thus at Buddh Gaya is the great temple of that name, which dates back to 543 B.C., and the Barabar Caves, 16 m. N. of Gaya town, are

of Arabic at Madrid, 1843, and, in 1881, director of public instruction for Spain. His historical and literary

work was mainly that of editing MSS., letters, etc., and his skill in reading 16th century handwriting was of great use to W.H. Prescott, the historian. Gayangos lived much in London, where he died Oct. 4, 1897. He compiled a catalogue of the Spanish MSS. in the British



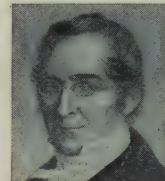
P. Gayangos y Arce, Spanish historian
Gayangos lived much in London, where he died Oct. 4, 1897. He compiled a catalogue of the Spanish MSS. in the British Museum, 1875.

Gay Lord Quex, THE. Modern comedy by Arthur Pinero, produced, April 8, 1899, at the (old) Globe, where it ran for 300 performances. John Hare and Irene Vanbrugh won a triumph in the piece.

Gay - Lussac, LOUIS JOSEPH (1778-1850). French chemist. Born at St.

Léonard, Haute Vienne, Dec. 6, 1778, he was educated at the École

Polytechnique, Paris. Assistant to Berthollet, and to Fourcroy, he was professor of chemistry at the École Polytechnique, 1809, and the Jardin des Plantes, 1832. He was created a peer in 1839.



Gaya, India. General view of the Buddhist temples and shrines in the town

regarded as among the oldest existing Buddhist monuments. Gaya town contains the famous temple of Vishnupada and other sacred shrines. Of the total area of the district about two-thirds is under cultivation; and of the cultivated area half is devoted to rice; other crops are wheat, pulses, and oilseeds. There are a number of small industries, carpets and rugs, ornaments, stone-ware, and lac being among the manufactures.

Gayal (*Bos frontalis*). Species of wild ox found in the hilly regions of N.E. India. It is smaller than the gaur, with which it is said to interbreed, and has straighter horns without any crest between them. It is more often seen semi-domesticated than wild. See Gaur.

Gayangos y Arce, PASCUAL DE (1809-97). Spanish historian. Born at Seville, June 21, 1809, he became professor



Gayal, a wild ox from north-east India

His chief work in physics was the deduction that a simple ratio exists between the volumes of gases which combine, and that the volume of the resulting compound bears a simple ratio to the volumes of the original gaseous constituents. These are known as Gay-Lussac's or Charles's laws. His chemical work included the discovery of cyanogen and its compounds, and an investigation of the properties of iodine. He died May 9, 1850.

Gaza. Town of Palestine, the modern Guzze or Guzzeh. Recognized as the key to Palestine from the south, it was always a place of strategical importance. In Biblical times it was one of the five chief cities of the Philistines. In 332 B.C. it was captured by Alexander the Great after a siege of five months, and afterwards figured extensively in the chronicles of Maccabees and Moslems, Crusaders and Turks. Napoleon took it in 1799.

Situated in the midst of a fertile country near the sea, on the edge of the desert between Palestine and Egypt, it has always been a prosperous town, and before the war was noted for its export of fine barley. Pop. 15,000.

Gaza, BATTLES OF. Fought between the British and the Turks, in March and in April, 1917. By the victory at Rafa, Jan. 9, 1917, Sir Archibald Murray accomplished his plan of interposing the width of the Sinai Peninsula on the N. between the Suez Canal and the Turks under Kressenstein. He then began the conquest of southern Palestine, after the rly. from El Kantara had been constructed close up to the frontier.

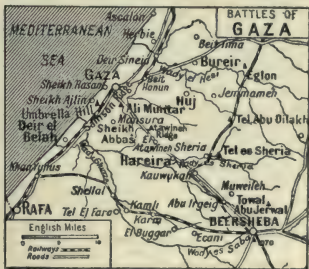
By the middle of March, 1917, the rly. reached Rafa, but the advance into Palestine had begun with the occupation of the village of Khan Yunus on Feb. 28. Kressenstein took up a strong position on a front stretching from Gaza to Beersheba through Sheria. On March 25 Dobell's desert column, consisting of Anzacs, yeomanry, and the 53rd division of infantry, together with artillery, was concentrated at Deir-el-Belah, 3 m. from the Wadi Ghuzze. Dobell also had at his disposal the 52nd and 54th divisions, the camel corps, and other artillery. On March 26 the Wadi Ghuzze was crossed without opposition by the cavalry and camelry. It had been designed that the cavalry and camelry should envelop Gaza from the E. and N., while the 53rd division attacked the town frontally. This programme was carried out, and the Turks in Gaza were hemmed in by the afternoon,

after offering a desperate resistance on the height known as Ali Muntar. Some Australians were fighting in the streets of the town, but darkness was coming on, and Turkish reinforcements from Huj, Sheria, and Hareira pressed heavily on the British right. There was no water for the horses, and during the night the British abandoned Ali Muntar, and the whole line fell back. Next morning Ali Muntar was re-occupied, but the Turks, heavily reinforced, were too strong, and on March 28 the British withdrew to the Wadi Ghuzze.



Gaza. The Great Mosque, originally a 12th century Christian church

But on April 17 the second battle of Gaza began. Meanwhile Kressenstein had turned his Gaza front into a fortress, and his forces had been increased to five infantry and one cavalry divisions. To the British had been added the 74th division, but the event proved



Gaza. Map of the battlefields of March and April, 1917

that they were in insufficient strength for a frontal attack, which alone was possible. On April 17 the British, helped by tanks, carried the Turks' outer defence line on Sheikh Abbas, and next day consolidated the ground won. On

April 19 the main effort was made, and though Samson Ridge was taken, it failed to carry Ali Muntar, and was beaten off elsewhere, with a loss to the British of 7,000 men. The battle was broken off as night fell, and was not renewed next day. As a consequence of this reverse, Sir Charles Dobell was relieved of his command. Sir Archibald Murray was replaced by Gen. Sir E. H. Allenby at the end of June, 1917. See Sir A. Murray's Dispatches, 1920.

Gaza, CAPTURE OF. British success over the Turks in Nov., 1917. As part of his general offensive against the Turks under Kressenstein, on the Gaza-Sheria-Beersheba line, General Allenby had fought and won the battles of Beersheba, Oct. 31, and Sheria, Nov. 6-7, 1917. The first broke the Turkish left, the second the Turkish centre, and on Nov. 6 at midnight Allenby launched what proved to be the final assault on the strong works covering Gaza, the Turkish right.

Before this attack Gaza, as well as the region immediately N. of it, containing the terminus of a strategic rly. built by the Turks from the Central Palestine rly., had been incessantly bombarded by British land batteries and warships from the sea. On Nov. 2, 1917, after a tremendous bombardment on Nov. 1, Scots and East Anglians stormed Umbrella Hill in front of Gaza, and the Turkish first line of defences from it to the coast, and held them, despite repeated counter-attacks. Thereafter the intense shelling of Gaza by the British was continued, and meanwhile Allenby's threat from Sheria, which had been heightened by his moving on Huj and Jemmameh, 9 and 11 m. respectively N.E. of Gaza, had caused Kressenstein to evacuate that town.

On the night of Nov. 6 only a few Turks remained to cover Kressenstein's retreat, and when western county and Indian troops on the S.E., with East Anglians and home county men on the coast, moved to the assault, Gaza fell into their hands with hardly a struggle early on Nov. 7. An outlying position, known as the Atwineh Ridge, E. of Gaza, was taken on Nov. 8, and with it the whole of the Gaza-Sheria-Beersheba line was in the hands of the victorious British forces. See Palestine, Conquest of.

Gazaland or **GASALAND.** Country of S. Africa, in Portuguese E. Africa. It is situated on the border of S.E. Rhodesia. The country is mountainous, has an abundant rainfall, and is watered by the Sabi river.



Gazania. Leaves and flowers of the S. African shrub

Gazania. Genus of perennial herbs of the natural order Compositae. They are natives of the Cape of Good Hope. The leaves of some species are entire and lance-shaped; of others deeply cut into narrow segments. The flower-heads are showy, the ray-florets a tint of yellow, and the tubular florets



Gazelle. Specimen of the Korin gazelle

usually of a darker colour. Many of the garden varieties are hybrids.

Gazebo. Summerhouse built to command a wide view over the surrounding country, corresponding to the Italian *belvedere*. The word is the future form of a supposed Latin verb and means I will survey. Lavabo, a wash-hand basin, I will wash, is a similar formation. A bow window is sometimes called a gazebo.

Gazelle (Arab. *ghazal*). Name given to a large number of species of small antelopes, chiefly found in the desert regions of the E. hemisphere. They are the lightest and most graceful of the antelopes, and usually have remarkably slender legs. The majority of the species are less than thirty inches high.

The upper molar teeth resemble those of the sheep.

Gazetteer. Name given to a geographical dictionary or encyclopedia, i.e. a book containing information about towns, rivers, mountains, etc., arranged in alphabetical order. Gazetteers may be universal, i.e. dealing with the whole world, or local, a gazetteer of England and Wales, for instance. The word referred originally to one who wrote for gazettes, passing thence to those who compiled reference works of the kind in question, and then to such works themselves. In 1695 Laurence Echard brought out The Gazetteer's or Newsman's Interpreter. This was later abbreviated to The Gazetteer, and so originated the use of the word in its present connexion. Harmsworth's New Atlas, although more than a gazetteer, contains much gazetteer information revised up to 1919-20.

G.B.E. Abbreviation for knight or dame Grand Cross Order of the British Empire.

G.C.B. Abbreviation for Grand Cross of the Bath. He is known as Sir.

G.C.I.E. Abbrev. for Grand Commander of the Indian Empire.

G.C.M.G. Abbrev. for Grand Cross of S. Michael and S. George.

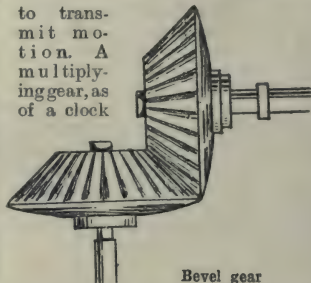
G. C. S. I. Abbreviation for Grand Commander of the Star of India.

G.C.V.O. Abbrev. for Grand Cross of (Royal) Victorian Order.

Géant, *ARGUMENT DU* (Giant's needle). One of the loftiest peaks of the Pennine Alps, France. In the dept. of Savoie, it is about 5 m. N.E. of Mont Blanc, and has an alt. of 13,170 ft. It is crowned with an aluminium statuette of the Madonna. The steep ascent from Chamonix over the Col (pass) du Géant (11,057 ft.) leads to Courmayeur in Italy.

Gear. Toothed wheel or series of connected tooth wheels for the transmission of motion from one machine to another, or from part of a machine to another part. Gear wheels are of varying shapes and sizes, with many different kinds of teeth cut upon them according to the speed and direction they are required

to transmit motion. A multiplying gear, as of a clock

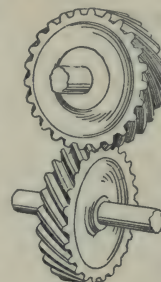


Bevel gear

or bicycle, causes the driven part to move faster than the driving part; a reducing, or de-multiplying gear, as of a crane, acts the reverse way; a change speed gear enables the

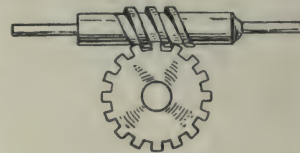
relative speeds of the driving and driven parts to be varied at will; a reversing gear alters the direction of motion.

In bevel gear, the toothed edges are set at an angle to one another so that motion in one direction may be transferred to a direction



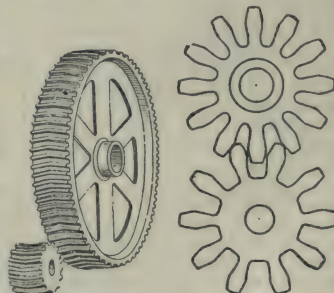
Skew gear

at right angles. A skew gear is employed between two shafts, the axes of which are not parallel and do not meet. Helical gear is used for gearing down of steam



Worm gear

turbines, etc., and is remarkably noiseless, owing to the constant engagement of the teeth. The double helical or herring-bone gear has right and left handed rows of teeth to eliminate end-thrust.



Double helical gear

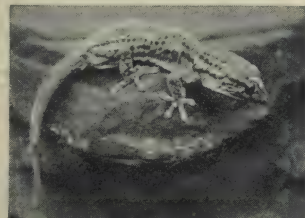
Spur gear

A series of gear wheels connecting with one another in any fashion for transmitting motion is called a train. In epicyclic trains, used for varying speed gears on bicycles, motor-cars, etc., wheels run round each other and are kept in contact by a connexion. A differential gear or compensating gear transmits power to both driving wheels of a motor-car or other vehicle in such a way as to allow the wheels to revolve at unequal speeds when travelling on a curve. *See* Motor-car; Shafting; Worm.

Geber (c. 702–c. 765). Arabian alchemist. The works on chemistry attributed to him are probably a collection of writings by different authors. Berthelot, who examined the authenticity of the works of Geber, held that *The Book of the Seventy* of Johannis is a translation of a genuine Arabic MS. by Geber. *See* Alchemy.

Gebweiler. Variant spelling of the name of the French town better known as Guebwiller (*q.v.*).

Gecko. Family of small lizards, common throughout the tropics. They are of dull colour, with many



Gecko. The S. European wall gecko. *Tarentola mauritanica*

tubercles on the skin, and have a somewhat repulsive appearance. In most species the toes act like suckers and enable the animals to ascend the window panes and run about the ceilings. They live on insects and are quite harmless.

Geddes, ANDREW (1783–1844). Scottish painter. Born in Edinburgh, April 8, 1783, he entered the R.A. schools in 1806, and was elected A.R.A. in 1832. He painted several scriptural subjects, *The Discovery of the Regalia of Scotland* in 1818, and exhibited at the R.A., 1821. The portrait of his mother (in the Scottish National Gallery) is deemed his masterpiece, but those of George Sanders, Sir David Wilkie, Patrick Brydone, and Dr. Chalmers are notable specimens of his skill. He died May 5, 1844.

Geddes, SIR AUCKLAND CAMPBELL (b. 1879). British politician. A son of Auckland C. Geddes and a brother of Sir Eric Geddes, he was educated in Edinburgh, and became a doctor. In the S. African



Sir Auckland Geddes, British politician
Russell

College of Surgeons, Dublin. He served in the Great War and obtained the honorary rank of brigadier-general.

In 1916 he returned from the front to become director of recruiting at the war office, and his success there led Lloyd George to make him a member of his Government. He became minister of national service in Aug., 1917; was knighted and obtained a seat in Parliament. In Nov., 1918, he was made a privy councillor and transferred to the local government board, and in Jan., 1919, he

was made minister of reconstruction. He was president of the board of trade, 1919–20, and British ambassador to the U.S.A., Mar., 1920, to Jan., 1924. He then entered on a business career, and in 1924–5 was chairman of the royal commission on food prices.

Geddes, SIR ERIC CAMPBELL (b. 1875). British politician. Born in India, Sept. 26, 1875, he was educated at Merchiston Castle School, Edinburgh, and passed some of his early years in America in the service of a rly. company. After holding a similar post in India, he returned to Britain to enter the service of the North Eastern Rly. Co. In a short time he became its deputy general manager. In 1915 Geddes was given a post in the ministry of munitions, and in 1916 was sent to France as director-general of military rlys.

Early in 1917 Lloyd George made him controller of the navy, and, later in the year, first lord of the admiralty. In 1919 he became

War he served in the Highland Light Infantry, and was afterwards assistant professor of anatomy at Edinburgh and professor of the same at McGill University, Montreal, and at the Royal

a minister without portfolio, and was first minister of transport 1919–1921. He presided over a committee on national expenditure in 1922, and became chairman of the Dunlop Rubber Co., 1923. In 1916 he was knighted.

Geddes, JENNY. Edinburgh kail-wife or vegetable seller. She is famed for having started a riot in S. Giles's Cathedral by hurling a stool at the dean who read Laud's liturgy there for the first time, July 23, 1637. A stool said to be hers is in the Antiquarian Museum, Edinburgh.

Geddes, PATRICK (b. 1854). British scientist and social reformer. Educated at Perth, Uni-



Jenny Geddes starting the riot in S. Giles's Cathedral, Edinburgh, by throwing a stool at the officiating minister

From an engraving by W. Hoilar

versity College, London, and abroad, Geddes became demonstrator in physiology at University College, London. He was lecturer in zoology at Aberdeen, and botany at Edinburgh; on natural history in the school of medicine, Edinburgh, and then professor of botany at Dundee. He travelled widely, and took a leading part in educational and social work in Scotland.

Geddes was director of the Cities and Town-Planning Exhibition. His writings were mainly articles on these subjects and works on biology and botany. In Aug., 1919, he was engaged by the International Zionist Commission to plan the reconstruction of Jerusalem and its proposed university.

Geelong. City of Victoria, Australia, in Grant co. It stands near the head of Geelong Harbour, an arm of Corio Bay, 45 m. by rly. S.W. of Melbourne, and is the port for the Western Plains wool and wheat, for the accommodation



Sir Eric Geddes, British politician



Patrick Geddes, British scientist
Elliot & Fry



Geelong, one of the most important towns of Victoria, Australia

of which there is wharfage capable of taking ships of the largest tonnage. It has paper works, cement works, limestone quarries, ropeworks, and tanneries. The first place in Australia to attempt woollen manufacture, it now has woollen mills, including some carried on by the government. Until the discovery of gold Geelong was the second city in Victoria. Pop. 30,652.

Geelvink Bay. Inlet on the N.W. coast of Papua, in Dutch New Guinea, between Cape Mamori and Cape D'Urville. It penetrates 120 m. inland, and is 150 m. wide at its entrance. The bay contains several islands, the chief being the Schouten Islands and Jobi.

Geer, LOUIS GERHARD, BARON DE (1818-96). Swedish statesman and writer. Born at Finspång, he became president of the supreme courts in 1855. He was minister of justice, 1858-70, and again in 1875, and while occupying that position introduced the measure establishing two chambers with popular representation, 1866. From 1876-80 he was president of the ministry. He was the author of many volumes of essays, stories, and biography, and published a volume of *Reminiscences* in 1892.

Geestemünde. Seaport of Germany, in the Prussian prov. of Hanover. It stands on the estuary of the Weser, at the mouth of the Geeste, 35 m. N.N.W. of Bremen. It is quite a modern place, its fine harbour only dating from 1863. This consists of two enormous basins, dry docks, etc., and can accommodate the largest vessels. It is an important fishing port, and among its industries are shipbuilding and the making of machinery and fishing equipment. Pop. 25,060.

Geffcken, FRIEDRICH HEINRICH (1830-96). German statesman and lawyer. Born at Hamburg, Dec. 9, 1830, he studied law at Göttingen and Berlin, and entered the Prus-

sian diplomatic service in 1854. Serving successively in Paris, Berlin, and London, he became a close friend and adviser of Prince Frederick William of Prussia, later the emperor Frederick III. He framed the federal constitution of the German Empire, 1870-71, and became professor of constitutional history, at Strasbourg in 1872.



In 1888 a heated controversy arose on his publication of extracts from Prince Frederick William's war diary calculated to lessen

the ascendancy of Bismarck, and Geffcken was indicted for high treason, but acquitted. He died at Munich, May 1, 1896. Among his many writings are *State and Church*, 1875, Eng. trans. 1877, and a volume of essays, Eng. trans. as *The British Empire*, 1889.

Geffrye Museum. London museum of furniture design and craftsmanship. Opened in 1914, it is situated in the Kingsland Road, near Shoreditch Church, and is housed in the old Geffrye, or Ironmongers' Almshouses, founded by Sir Robert Geffrye, or Geffrey (1613-1703), lord mayor of London and master of the Ironmongers' Company, and opened in 1715. The 14 almshouses and chapel stand round three sides of a court. The collection, partly permanent, partly on loan, includes specimen rooms of various periods, carved mantelpieces, doorways, and grates, and much beautiful furniture. It is open free every day, except Monday.

Gefle. Seaport of Sweden, and capital of the län or govt. of Gefleborg. It stands at the mouth of the

river Gefle, 112 m. N.N.W. of Stockholm. The river here branches into three arms, forming two islands, on which, and on the main shores, the city is built. It is the chief port for the Kopparberg timber and iron district, exporting timber, wood pulp, iron, and joinery. Fishing is extensively engaged in, and there are shipbuilding yards and manufactures of sailcloth, cotton, electrical machinery, leather, and tobacco. It has a 16th century castle, a town hall, library, technical schools, and theatre. Pop. 31,941.

Gefleborg or GÄVLEBORG. Maritime län or govt. of Sweden. Bounded on the E. by the Gulf of Bothnia, its area is 7,615 sq. m. Its coastline is much indented by small bays, the chief of which is Gefle Bay, in the S.E., and the shores are fringed with numerous islands, none of any great size. Gefle is the capital and chief seaport, other seaports being Soderhamn and Hudiksvall. There are many lakes, the largest of which is Dellen in the N.E. Rivers are numerous but short, and mostly drain into the Gulf of Bothnia. Pop. 264,323.

Gegenschein. Counter glow, or faint patch of light seen opposite the sun's place in the sky while the sun is below the horizon. First detected by Brorsen about the middle of the 19th century, it has since then been independently discovered by Professor Barnard of the Lick Observatory. It has been variously attributed to reflection of sunlight by the earth's hydrogen and helium gases, far distant from the earth, and to similar reflection by a swarm of meteorites. See Zodiacal Light.

Gehenna. Name in Biblical and post-Biblical literature of a place of fiery torment. It is derived from Ge-Hinnom, the Valley of Hinnom, a valley on the W. of Jerusalem in which the refuse of the city and the bodies of animals and criminals were burned. In Matt. v, 22, x, 28 the word is translated hell. See Hell.

Geijer, ERIK GUSTAF (1783-1847). Swedish historian and poet. Born at Ransäter in Värmland, Jan. 12, 1783, he was educated at Upsala, where he distinguished himself by his monograph on Sten Sture and his aptitude for historical research. He became a lecturer at Upsala in 1810, and in 1817 professor there, holding also a position in the Swedish public record office. He died at Stockholm, April 23, 1847. Geijer's great work is his *History of the Swedish People*, 1832-36. He was also a poet, a musician, and at one time an active politician. His collected works appeared 1849-56. *Pron. Yi-er.*

Geijerstam, GUSTAF AF (1858-1909) Swedish novelist. Born Jan. 5, 1858, he graduated at Upsala



Gustaf af Geijerstam.
Swedish novelist

University and worked as a journalist at Stockholm from 1884-93. His first novel, *Deathly Cold*, 1882, showed him to belong to the new realistic school of Swedish literature. Among his many novels may be mentioned *Pastor Hallin*, 1887; *The Head of Medusa*, 1895; *Astray in Life*, 1897; and the semi autobiographical *Book of Little Brother*, 1900. He also wrote a number of witty peasant comedies.

Geikie, SIR ARCHIBALD (1835-1924). British geologist. Born in Edinburgh, Dec. 28, 1835, he was educated at its high school and university. He entered the geological survey in 1855, and became director of the geological survey of Scotland in 1867. Mean-



Arch Geikie
Russell

time he had made a reputation as a popular writer on geology in *The Story of a Boulder*, 1858, and *Scenery of Scotland*, 1866. From 1871-82 he was Murchison professor of geology and mineralogy in Edinburgh University.

Foreign secretary of the Royal Society, 1890-94, and secretary, 1903-8, his main life work was as director-general of the geological survey of the United Kingdom, and director of the museum of practical geology, 1882-1901. In addition to his *Text-book of Geology*, 1882, and *Class-book of Geology*, 1886, he wrote on volcanoes of Great Britain, scenery and its influence on history and literature, the founders of geology, and lives of R. I. Murchison and A. C. Ramsay. He was knighted in 1891, created K.C.B. in 1907, and given the O.M. in 1914. His *Scottish Reminiscences* appeared, 1904. Died Nov. 10, 1924.

Geiler von Kaisersberg, JOHANN (1445-1510). German preacher. He was born at Schaffhausen, March 16, 1445, and educated at Freiburg and Basel. From 1478 he preached at Strasbourg Cathedral, and established his reputation as the greatest pulpit orator of his age. The author of several volumes on theological subjects. He died March 10, 1510.

Geisha. Girl in Japan trained as an entertainer. Taught music, dancing, singing, and the art of conversation from an early age, these professional singing and dancing girls are engaged to tell stories, provide music, and dance at dinner parties and receptions, and to amuse their hosts by witty repartee. See *Asia: Dancing. Pron. Gay-sha.*

Geisha, THE. Musical comedy, written by Owen Hall (James Davis), composed by Sidney Jones,



Geisha, in characteristic costume, playing the shamisen

and produced at Daly's Theatre, London, April 25, 1896, where it ran for 760 performances.

Geissler, HEINRICH (1814-79). German inventor. Born in Saxony, May 26, 1814, he became a glass blower. For some time he lived in Holland, where he made a number of useful experiments. In 1854 he settled at Bonn, and there he died, Jan. 24, 1879. He invented a sealed glass tube called the Geissler tube, which was used to examine the passage of an electric current through rarefied gases.

Gela. City of ancient Sicily. It stood on the S. coast and was founded by Greeks. At one time, under the tyrants Cleander, Hippocrates, and Gelo, it was the chief city of Sicily; but after Gelo had transported half its inhabitants to Syracuse, its prosperity declined. Phintias, of Agrigentum, transferred the remainder of the people, in 280 B.C., to a town he himself founded, and Gela fell into decay.

Gelasius I (d. 496). Pope 492-96. Called on to deal with the schismatic followers of Acacius at Constantinople, he tried in vain to reconcile the Eastern Church to Rome. In this and in other matters he strongly maintained the supremacy of the Roman see. He was responsible for putting a stop to the *Lupercalia (q.v.)* at Rome, and for the establishment of ordinations at fixed times, i.e. Ember

days. He has given his name to one of the three earliest Sacramentaries or Service books, *Sacramentarium Gelasianum*.

Gelatin or **GELATINE** (Fr. *gélatine*, Lat. *gelatus*, frozen). Constituent of animal tissues, bones, hoofs, etc., which forms a transparent jelly when dissolved in water. Gelatin is essentially a purified form of glue. By Cox and Nelson's processes parings of hides are purified and the gelatin extracted by hot water, the solution being afterwards purified, concentrated, and solidified in thin layers, which are dried on nets.

Gelatin is largely used for culinary purposes; as a basis for photographic sensitive surfaces; in bacteriology; as a size for paper; in dyeing; and in making printers' ink rollers. Gelatin is soluble in glacial acetic acid, when it loses its gelatinising power, but the solution forms a useful cement for glass. When gelatin solution is treated with a bichromate salt, allowed to solidify and exposed to light, the gelatin becomes insoluble. This property is utilised in the carbon process of photography, and in the manufacture of washable distempers.

Gelatin Dynamite. Industrial high explosive intermediate between blasting gelatin and gelignite. In England it consists of 80 p.c. of blasting gelatin incorporated with 4 p.c. of wood meal and 16 p.c. of potassium nitrate. In the U.S.A., sodium nitrate is employed in the place of the potassium salt and seven "strengths" are made containing from 24 to 63 p.c. of blasting gelatin, the nitrate and wood meal content decreasing as the blasting gelatin increases. See *Blasting Gelatin; Explosives.*

Gelderland, GUELDERLAND OR **GUELDERS.** Province of Holland, formerly a duchy of the Empire. Bounded by the Zuider Zee on the N.W. and by Prussian territory on the S.E., it adjoins the prov. of Utrecht, N. Brabant, S. Holland, and Overijssel, and is watered principally by the Lower Rhine, Waal, and Yssel, while the Meuse forms the S. boundary. The good pasturage supports large numbers of cattle, small estates predominating in the agricultural districts, and corn, flax, beet, and tobacco are important crops.

The capital of the province is Arnhem, other important towns being Zutphen, Nijmegen, Apeldoorn, and Elburg. The province is traversed by several main rly. lines and many narrow-gauge steam-tramways; the Grift and Apeldoorn canals are notable. Though generally flat, the country is attractive, and in the slightly hilly country N. of Arnhem is

varied and picturesque. The province, which sends six members to the lower chamber, has a characteristic dialect of High German tendencies. Area. 1,939 sq. m. Pop. 727,165.

Gelderland was part of the Frankish kingdom of Austrasia. It was made a county by the emperor Henry IV in 1079 for Gerard of Wassenburg, whose descendants became its hereditary rulers. Reynald I was defeated by John of Brabant at Woeringen, 1288, but his son Reynald II extended and strengthened his domains, which were erected into a duchy by the emperor Louis V in 1339. Dynastic quarrels marked the middle of the 14th century, and in 1379 the succession fell to William of Juliers.

Duke Arnold of Egmont ceded the duchy to Charles the Bold of Burgundy in 1472, the latter succeeding in 1473, though strongly opposed by the estates, i.e. a body representative of the nobility and the chief towns. Arnold's son, Adolph, succeeded Charles in 1477. In 1483 Maximilian of Austria assumed suzerainty, but he was challenged by Charles of Egmont, who ceded the duchy to William of Cleves in 1538. In 1543 Gelderland passed to the emperor Charles V, remaining a Hapsburg fief until it became one of the United Provinces in 1578.

Occupied by Louis XIV, 1672-73, part of the province went to Prussia in 1713. The French revolutionary armies invaded it in 1794, and from 1810-14 it was in the French possessions as the dept. of Roer. In 1814 it finally became part of the kingdom of the Netherlands (*q.v.*).

Gelée, CLAUDE (1600-82). French painter. He is usually known as Claude Lorrain, from his birthplace,



Claude Gelée,
French painter
From an old portrait

Chamagne in Lorraine. Going to Italy as a youth, he was employed in Rome for some years by the landscape painter, Tassi, who aided and encouraged him. He did much open-air sketching, the foundation of his great powers as a landscape painter, and left Tassi in 1625. He then travelled widely, working in Venice, France, and Nancy, returning to Rome in 1627. His pictures soon secured him patrons, and thenceforward he was steadily at work. To guard against the frequent forgeries of his works, he compiled the six volumes of *Libri di Verità* (Books of



Gelée. Embarkation of S. Ursula. Painted by Claude Lorrain for Cardinal Barberini in 1646. now in the National Gallery, London

Truth), in which he drew sketches of all pictures leaving his studio, giving details of dates and ownership. These now belong to the duke of Devonshire, but were reproduced and published in 1777. Claude died at Rome, Nov. 21, 1682.

His works are marked by a richness of detail and grandeur of composition which few of the classical landscape painters have approached. His intimate knowledge of nature, coupled with his delicate sense of colour, produced many scenes of surpassing beauty, although he was quite unable to paint the human figure adequately, sometimes being obliged to have his figures inserted by other hands. Good examples are to be found in the National Gallery, London, especially the Marriage of Isaac and Rebecca, and the Embarkation of the Queen of Sheba.

Gelignite. Industrial high explosive. It is used for blasting where a cheaper and less violent explosive than blasting gelatin is required. It is generally regarded as a standard explosive. It contains about 65 p.c. of nitroglycerin, which has been made to the consistency of thin jelly by the solution in it of collodion cotton, 27 p.c. of potassium nitrate, and 7 p.c. of woodmeal. A little calcium carbonate is present, as in the case of blasting gelatin, and a small quantity of moisture. Gelignite is not so local in its action as blasting gelatin, rocks over a wider area being split into larger fragments. See *Blasting Gelatin*; *Explosives*: *Dynamite*; *Nitroglycerin*.

Gelimer. Last Vandal king. A descendant of Gaiseric, he made himself king of the Vandals in 530 by overthrowing his kinsman Hil-

deric, whom a little later he murdered. He ruled over the Vandal kingdom in Africa for about four years. In 533 his kingdom was attacked by the Romans. A force under Belisarius landed in Africa, and met the Vandals in battle 10 m. from Carthage. There Gelimer's force was routed, and Carthage was entered. However, the king assembled a new army, and a second time gave battle to Belisarius. This took place in Dec., about 20 m. from Carthage, and ended in the defeat of the Vandals. Gelimer fled, but in March, 534, he surrendered. He walked as a captive in the triumphal procession of Belisarius at Constantinople, afterwards disappearing from history.

Gell, SIR WILLIAM (1777-1836). British antiquary and traveller. Son of Philip Gell, of Hopton, Derbyshire, he was educated at Jesus College, Cambridge, became a fellow of Emmanuel, and studied at the Royal Academy school. He was knighted in 1803, on his return from a mission to the Ionian Islands; was chamberlain to Queen Caroline in 1820, and, living thereafter mainly in Italy, died at Naples, Feb. 4, 1836. He wrote a number of authoritative books on the topography and antiquities of Troy, Ithaca, the Morea, Pompeii, and Rome, most of them being illustrated from sketches by himself.

Gellert. Hound given according to tradition by King John to his son-in-law, Llewellyn, in 1205. The story runs that Llewellyn, returning from a hunt at which Gellert had been missing, was met by the dog covered with blood. Hurrying into his castle he found his infant heir's cradle overturned



1. Diamond, Kimberley, S. Africa. 2. Opal, Queensland, Australia. 3. Ruby (Corundum), Upper Burma. 4. Quartz (Cat's Eye). 5. Turquoise (Calaite), Khorassan, Persia. 6. Chrysoberyl, Russia and Ceylon.

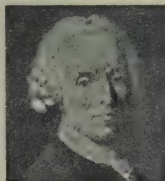
7. Topaz, Brazil. 8. Emerald (Beryl), Colombia, S. America. 9. Tourmaline, California. 10. Sapphire (Corundum), Upper Burma. 11. Garnet (Almandine), Russia. 12. Amethyst, Brazil

GEM: PRECIOUS STONES IN THEIR NATURAL AND FINISHED STATES

Specially drawn for Harmsworth's Universal Encyclopedia by J. F. Campbell

and blood-stained, and slew the dog believing that it had killed his child; only to find, too late, that the faithful dog had killed a wolf that had attacked the boy. Gellert's grave is shown at the village of Beddgelert, in Wales, near Snowdon. The story was common in Europe in different forms long before, and is probably of Eastern origin.

Gellert, CHRISTIAN FÜRCHTEGOTT (1715-69). German poet. Born in Saxony, July 4, 1715, he



C. F. Gellert.
German poet
After Anton Graff

was professor of moral philosophy in the university of Leipzig, where his lectures were attended by Goethe. His *Fables*, 1746 - 48, gained him the name of the La Fontaine of Germany. His moral writings are characterised by deep religious feeling, and exercised a most wholesome influence. He died at Leipzig, Dec. 13, 1769.

Gelligaer. Urban district of Glamorganshire, Wales. It is 14 m. N. of Cardiff, on the Monmouthshire boundary. Its Norman church of S. Cadocus was restored in 1867. There are extensive collieries in the surrounding district. The council owns an electrical undertaking. Gelligaer is near the site of a Roman hill-fort of the 1st century A.D. The best preserved example of the period, it illustrates with exactitude Josephus's description of a Roman camp. Its four-gated, turreted ramparts enclose 2½ acres, with headquarters, six barracks, two granaries, and extramural baths. Pop. 35,521.

Gellius, AULUS. Roman writer, who flourished in the 2nd cent. A.D. After studying rhetoric and philosophy at Rome and then at Athens, he returned to Rome, where he was entrusted with certain judicial functions. He was the author of *Noctes Atticae*, or *Attic Nights*, so called from having been begun during his stay in Athens, a miscellany in 20 books, of which the eighth is lost. Its great value lies in the fact that it has preserved, in the form of quotations, fragments of earlier writers whose works have perished, and contains conversations with learned men on linguistic and literary matters.

Gellivare. Town of Swedish Lapland, in the govt. of Norrbotten. It is 116 m. by rly. N.W. of Lulea, and there is also rly. connexion with Narvik, at the mouth of the Ofoten Fjord, on the W. coast of Norway. It owes its im-

portance to the extensive iron mines of Malmberg, a hill 2,025 ft. high, with a mining village. The deposits are among the richest in the world, some 1,100,000 tons of iron being exported yearly. The town itself is substantially built, and possesses an old Lapp chapel and an ancient cemetery. Pop. 12,100.

Gelnhausen. Town of Germany in the Prussian prov. of Hesse-Nassau. Situated on the Kinzig, a tributary of the Main, 14 m. E.N.E. of Hanau, it carries on a variety of industries, including the manufacture of rubber goods, tobacco and wine. Gelnhausen has had a distinguished past, having been made an imperial town in 1169; and on an island in the Kinzig are the ruins of a castle built by Barbarossa. There is a notable church, the Marien Kirche, in the town, dating from the 13th century. Pop. 4,859.

Gelnica. Town in the Slovakia division of the Czecho-Slovak republic, generally known as Gölncz-bánya (*q.v.*).

Gelo (Gr. *Gelōn*). Tyrant first of Gela (491 B.C.) and afterwards of Syracuse (485) in Sicily. In the second Persian war he offered a force of 30,000 men to help the Greeks against the Persians, on condition that he should have the sole command. This the Greeks refused, but Gelo had an opportunity of distinguishing himself nearer home, when Sicily was invaded by the Carthaginians with an immense force under Hamilcar. This force Gelo defeated at Himera in 480 B.C. on the very day on which the Greeks gained their victory over the Persians at Salamis. A wise and beneficent ruler, he was styled the saviour of his country, and after his death (478) was honoured as a hero. *Pron.* Jee-lo.

Gelsemine (Ital. *gelsomino*; Arab. *yasmin*, jasmine). The chief alkaloid contained in yellow jasmine (*Gelsemium sempervirens*), another alkaloid, gelseminine, being also present. Gelsemine is extracted from the finely powdered root by means of alcohol. It is very poisonous, and like strychnine has an intensely bitter taste. The total alkaloids present in the gelsemium root is about 0.25 p.c., three-fourths of which consists of gelsemine. It is considered, however, that the medicinal activity of the drug is due to the gelseminine. The tincture of gelsemium is prescribed for neuralgia.

Gelsenkirchen. Town of Germany in the Prussian prov. of Westphalia. It lies in the heart of the industrial district, 6 m. N.W. of Bochum, and 5 m. N. of Essen, on the Rhine-Herne canal. A modern

town, with a pop. of only 844 in 1852, it derives much of its prosperity from its coal mines. Other important industries are iron and steel works, the manufacture of machinery, and chemical and brick works. It also carries on a trade in grain, wood, cattle, etc., much of the traffic passing over the canal to the Rhine. Gelsenkirchen, which has absorbed many neighbouring localities, became a city in 1875. Pop. 181,600.

Gem. Name given to precious stones, especially diamonds, rubies, sapphires, topazes and emeralds after they have been cut and polished. It is used in a secondary sense for cameos, and the less precious stones, *e.g.* agates, garnets, jaspers, onyxes. By a quaint conceit the Romans divided gems into male and female according to the depth or lightness of their colour. James Tassie (1735-99) and his nephew William Tassie (1777-1860) were reproducers of antique gems in a vitreous material of their own composition. *See Cameo*: Diamond; Emerald, etc.: also Artificial Gem Stones and Colour Plate.

GEM CUTTING. In its modern sense of shaping the surfaces of stones in rectangular or triangular planes called facets, gem cutting is comparatively modern. But the rougher dressing and polishing of precious stones, as well as the carving of gems, was practised at least as early as 4600 B.C., for turquoises, amethysts, and lapis-lazuli have been found in the form of spherical beads, flat or slightly domed circles and rectangles in Egyptian tombs of the early dynasties. In the East precious stones were roughly shaped by chipping or grinding down to flat or domed surfaces and then polished.

Early Centres of Cutting

The art of gem cutting developed in Paris about 1280, and nearly a century later flourished at Nuremberg. A clever school of gem cutters existed at Bruges in 1460; twenty years later Amsterdam was a recognized centre of the diamond-cutting trade, while the trade in coloured stones was busiest at Lisbon. But Paris retained its reputation, which was enhanced by Cardinal Mazarin's introduction of the "brilliant" form of faceting. The trade was broken up at the Revolution. In London little fine work was done until about 1650, but since 1875 the gem cutters of London and Birmingham have rivalled in skill those of Amsterdam, Antwerp, and Paris.

There are various styles of cutting: (1) *Brilliants* have a flat, octagonal table, surrounded by 32 smaller facets sloping to the girdle: the lower part is pyramidal, 24

facets sloping to the flat culet. This method, by assisting refraction and reflection, is especially adapted for showing off the beauties of diamonds and rubies. A half-brilliant is only faceted from girdle to table, having a flat base. (2) Roses are rather like the half-brilliant, the top surface being cut with six or more triangular facets of equal size, with flat back. These styles are useful for small, thin stones. (3) Briolettes are pear-shaped, covered with triangular facets, but without table, girdle, or culet. They are sometimes drilled across, to be worn as swinging pendants.

(4) Star cut stones were fashionable early in the 19th century; they are combinations of the brilliant and rose, with facets grouped in multiples of six. (5) Step or trap cut stones may be of any shape, though very often nearly rectangular. The facets are long and flat, placed parallel to the girdle. It is an excellent style for making the most of colour effect. (6) Table cut stones are either four-sided double pyramids or regular octahedra, with large table, table and culet either equal or varying in size.



Gemination. A. Piece of sponge laden with buds a-i; i, spicules of buds directed away from their free ends; k, spicules of parent directed towards the osculum, j. B. Bud which has been set free and has become fixed by the extremity

From *The Cambridge Natural History*, Macmillan & Co.

(7) The dome-shaped cabochon is one of the oldest styles. A cabochon may be more or less convex, the convexity being equal or dissimilar on both faces, or the base may be flat. The treatment will depend upon the nature and quality of the stone. This form of dressing is applied more particularly to opaque and translucent stones, such as turquoise and opal, but it is also used for deep-toned garnets and a few other coloured stones. Bastard cut stones are those of mixed styles.

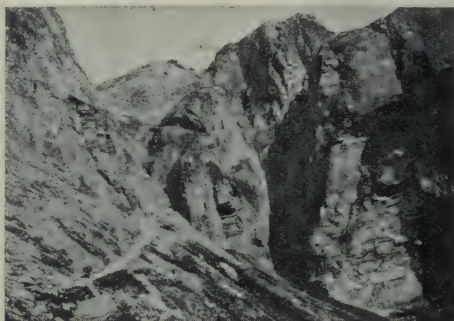
The great art of gem cutting is to bring out the special beauty of individual specimens, removing or minimising blemishes, with as little loss to the bulk of the stone as possible. Emeralds are nearly always cut square or oblong, with step facets. Diamonds are the most difficult stones to cut and polish, owing to their extreme hardness and brittleness. Yet the gem cutters' appli-

cations are quite simple. The rough dressing of diamonds and a few other gem stones may begin with cleaving or slitting—removing a defective or awkwardly shaped part; the stone being cemented on a wooden holder, with the line of cleavage parallel to the stick. Then a sharp, thin, steel blade is placed against the stone and struck sharply with a mallet, clean cleavage taking place. The operation can also be performed by sawing with a thin steel disk, but this often results in loss of brilliancy, even to the development of icy flakes, tiny fissures only visible to the eye as slight cloudiness.

Facets are formed by grinding against a steel revolving cone or cutting with the steel disk. The cone and disk of diamonds must be thinly coated with a paste of diamond dust and olive oil. This paste, or a paste of emery powder in water, is used for other stones. Polishing is accomplished by these pastes in a finer form, or with tripolite, rottenstone, or jewellers' rouge. Boring is performed by the rapid rotation of a diamond point. All these tools are

worked on a lathe.

Engraving, both incised carving (*intaglio*) and relief carving (*cameo*), is carried out by means of small steel wheels at the end of a rotating axis in a lathe. Certain of the softer stones, such as rock crystal, agates, and other siliceous stones, are etched with hydrofluoric or other suitable acid instead of being carved. The surface is covered with wax, into which the design is cut with a graver, down to the stone, which is then washed with acid. When the wax is removed the design will be found etched in the stone.



Gemmi Pass. One of the gorges in the Bernese Alps threaded by a mule track

Gemini OR THE TWINS. One of the ancient Ptolemaic constellations. Castor and Pollux form the heads of the Twins. Their feet stand on the Milky Way.

Gemmation (Lat. *gemmare*, to bud). Biological term signifying both the process of budding and the arrangement of buds on a stalk. More particularly, the term is restricted to the asexual method of reproduction in certain lowly organisms in which the offspring take their origin as an outgrowth or bud from the parent, afterwards becoming separated as an individual. See Botany.

Gemmi. Pass or mule-track over the Bernese Alps, Switzerland. It communicates between Frutigen in Berne, and Leukerbad in the canton of Valais, and reaches an alt. of 7,640 ft. The track passes the Dauben See, and is often called the Daube Pass. There is an hotel on the summit, and from it there is a remarkable view, including the Matterhorn, Monte Rosa, the Dent Blanche, and the Wildstrubel.

Gemsbok (*Oryx gazella*). Species of antelope, found in the desert regions of S.W. Africa. It is remarkable for its long straight horns, which sometimes reach a length of 45 ins. The animal is about 4 ft. high, and is grey on the back and sides, with white below.



Gemsbok, the long-horned antelope found in South-West Africa

There are black markings on the face, throat, and upper parts of the limbs. It is said that the gembok can successfully fight the lion with its horns. The name is Dutch, meaning chamois-buck.

Gendarme (Irregular singular of *gens d'armes*, men-at-arms). Member of a military constabulary formed in France in Jan., 1791. In 1812 the system was introduced into Germany, and gendarmerie forces, ordinarily recruited from the army, now exist also in Austria, Belgium, Holland (where they are called *Marachaussees*), Italy (*Carabinieri*), and Spain (*Guardia civil*). The gendarmerie, under the control of the various ministers of the interior, are employed for the protection of villages and country places, and

for the enforcement of certain state and national legislation, and are almost invariably subject to the orders of the civil authority, although in France and Italy, while forming one of the reserves of the minister of the interior, they are directly under the orders of the minister of war. See *Carabinieri*.



Gendarme. French military constabulary. See *Carabinieri*.

Gender (Lat. *genus*, kind). Classes into which nouns are divided according to sex or absence of sex. They are sometimes three in number—masculine, feminine, and neuter; sometimes two—masculine and feminine; and in inflexional languages are shown by different terminations. But this grammatical distinction is often arbitrary; thus, in Latin *mensa* (table) is feminine, in German *Mond* (moon) masculine, *Sonne* (sun) feminine. In English, grammatical gender does not exist, natural gender, in which sex and gender agree, being shown by special endings (executer, executrix), or by different words (horse, mare; fox, vixen). It is probable that originally the distinction of gender was natural, not grammatical.

Genealogy (Gr. *genealogia*). History of the descent of a family. The principal data are places and dates of birth, of marriage and of death, names of husbands and wives, particulars as to offices held, or professions, of wills proved, and any other particulars. These may be supplemented by a pedigree, or a family tree, in which the growth of a family is shown in the reverse

way, the various generations with their armorial insignia being displayed as fruits of a tree, rooted in the founder of the house. See *Peerage*; consult also *How to Write the History of a Family*, W. P. W. Phillimore, 1887; *The Genealogists' Guide*, G. W. Marshall, 1903; *Pedigree Work*, W. P. W. Phillimore, 1914.

Genée, ADELINE (b. 1878). Danish dancer. Born at Aarhus, Denmark, Jan. 6, 1878, and trained as a dancer from the age of eight, she became *première danseuse* at the Copenhagen Opera in 1895. Her success led to engagements at Berlin, Munich, and elsewhere. From 1897 to 1907 she danced leading parts in numerous ballets at the Empire Theatre, London, notably in *The Press*, Feb. 14, 1898, and *The Dancing Doll*, Jan. 3, 1905. She was extraordinarily popular as an exponent, endowed with flawless technique, of the traditional school of ballet. She also appeared in the U.S.A., Paris, and in Australia. Her farewell performance was given at the London Coliseum, May 11, 1914, but she made a short reappearance there in April, 1915.



Adeline Genée, in the *Dance of Bacchus*.

General OR **GENERAL OFFICER**. Name given to a military officer of almost the highest rank, only field-marshal being above it. It is used loosely for all officers above the rank of colonel-commandant, as well as for those who are full generals. In the British army there are major-generals, lieutenant-generals, and generals, in order of seniority. The equivalent rank in the navy is admiral.



General. Rank badges on shoulder-strap of a British general.

During the Great War the commanders of armies were given the rank of general, either temporary or substantive. The term is common to most armies; the French have *général*, *général de division*, and *général de brigade*, and the Germans have a similar order. In the U.S.A. this rank is only given rarely, the highest acting rank being that of lieutenant-general. The word was first used in

its present sense about the end of the 16th century. In 1650 Cromwell was made captain-general of the forces of the Commonwealth, and was afterwards known as the lord-general. Marlborough was the captain-general, and afterwards the present forms came into use.

General. Title used in the Roman Catholic Church to designate the heads of some religious orders. Under the pope, the general is the supreme head of his order, and exercises authority over the provincials as they, in turn, control the individual communities in their provinces. The general is usually elected by a chapter of provincials for a period of three years; but in the Jesuit order, for life. The generals live at Rome and are under no episcopal jurisdiction save that of the pope. See *Jesuits*.

General Assembly. Name given to the governing body of most of the Presbyterian churches in the world. As a rule, it meets once a year, consists of both ministers and laymen representing the presbyteries of the church, and is presided over by a moderator. It is the final authority on all matters of church discipline and order. The general assembly of the Church of Scotland, an established church, differs slightly from those of the unestablished churches: at its annual meeting, usually held in Edinburgh in May, the king is represented by a high commissioner and members are sent thereto from the royal burghs and the universities of Scotland. See *Presbyterianism*; *Scotland, Church of*.

Generalisation. Mental process which, with the aid of abstraction and comparison, discovers the qualities common to a class of individual things and unites them in a single idea called a concept. Generalisation simplifies knowledge by enabling a number of particular ideas to be combined under a single idea; further, if there were no general ideas, it would be necessary to employ a special name for every individual object.

Generalissimo. Unofficial title popularly conferred upon a general in supreme command of two or more allied armies or forces of different nationalities, each under the command of its own general. This position was held in the Great War by Foch from March 26, 1918, to the end of the struggle. The word is formed from an assumed Latin superlative of *generalis*, *generalissimus*, most general.

General Medical Council. Authority appointed under the Medical Act of 1858 to regulate the qualifications of medical practitioners and exercise disciplinary

control in certain professional matters. The council is composed of 27 members chosen by the different Universities of England, Scotland, Ireland, and Wales, the Royal Colleges of Physicians, and Royal Colleges of Surgeons of England, Edinburgh, and Ireland, the Apothecaries' Society of London, and the Apothecaries' Hall of Ireland; five members nominated by the Crown through the privy council; and six members or direct representatives elected by the medical practitioners of England, Scotland, and Ireland. Its principal duties are: To keep the medical register, i.e. the list of medical men who have complied with regulations made by the council and have passed a qualifying examination. Unless a medical man is registered he does not possess the privileges which have been granted by law to members of the medical profession.

The General Medical Council alone has the right to place a doctor on the list or to remove his name; to supervise the examinations conducted by universities and colleges entitled to grant medical qualifications, in order to satisfy itself that a proper standard of skill and knowledge is maintained; to frame regulations for professional conduct, breach of which may render the offender liable to be struck off the register, e.g., advertising or canvassing for patients, covering or assisting unqualified practitioners, etc.; and to publish, and from time to time issue revised editions of the British Pharmacopoeia, i.e. a book containing a list of medicines and compounds, together with the manner of preparing them and their appropriate doses.

General Paralysis of the Insane. Disease of the brain characterised by progressive mental and physical deterioration, terminating in insanity and paralysis. By far the most frequent cause of the disease is syphilis, and many authorities hold that this is invariably an antecedent factor. Contributory causes are worry and long-continued occupation involving severe mental strain. The pathological changes most often found on post-mortem examination are thickening of the covering membranes of the brain and atrophy of its convolutions.

The onset of the disease is insidious, and the early symptoms are likely only to arouse suspicion in a medical man. Changes of character are common. A man may become inattentive and forgetful, launch out into rash enterprises and squander his money, or he may take to drink, become morose and irritable, and commit offences against decency, steal, or display

other immoral tendencies. Blurring of the speech in pronouncing certain words, and slight tremulousness of the lips and tongue are often early symptoms.

As the disease progresses the mental symptoms become more marked. A characteristic feature is the appearance of delusions associated with grandeur, the individual, perhaps, imagining himself to be of high rank or great learning, or to possess unbounded wealth. Periods of depression or melancholia may interrupt the condition of exaltation, and outbreaks of acute maniacal excitement may occur in which the sufferer may do violence to himself or inflict grave injuries upon others. Attacks resembling epileptic seizures may supervene, the sight may be affected owing to atrophy of the optic nerve, and the gait may become abnormal. In the last stages the patient becomes completely demented, paralysed, and emaciated, death occurring from exhaustion, pneumonia, or other intercurrent disease.

The prognosis is bad, death usually occurring within a few years. Occasionally the condition remains stationary for a number of years. Medical treatment is rarely of much avail, but the effect of potassium iodide may be tried and drugs of the salvarsan class may be administered.

General Service Medal, NAVAL.

Instituted by King George V, in 1915, to be awarded for service in minor naval warlike operations. These may be either in the nature of belligerency or of police, if they are considered of sufficient importance to justify the award of a medal. The riband of the medal is red (four strips) and white (three strips). It was first awarded, with a clasp inscribed "Persian Gulf, 1909-1914" to officers and men who were employed in operations for the suppression of arms traffic in the Arabian Sea or Persian Gulf, between Oct. 19, 1909, and Aug. 1, 1914. An earlier naval general service medal was struck, in June, 1847, and given to members of all ranks who took part in the Napoleonic and several subsequent campaigns.

Later a general service medal was conferred on those who fought in the Indian war of 1799-1826; and later medals included that of 1908, and one for operations against Afghanistan, in 1919.

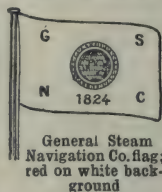


General Service Medal issued in 1847

General Steam Navigation Co., Ltd.

British steamship company. Founded in 1824, it has now a fleet of about

forty vessels. Its services are the carriage of cargo between London and the ports on the E. coast of England, London, and Bordeaux, Havre, Amsterdam, and Rotterdam; London and Oporto; also to ports in Italy; and between Leith and Glasgow. It carries passengers from Harwich to Hamburg and from London to the Mediterranean ports; and in summer, tourists to Southend, Margate, and Ramsgate. Its headquarters are 15, Trinity Square, London, E.C.



General Steam Navigation Co. flag; red on white background

Generator. Apparatus for producing electricity. A voltaic cell may be described as a generator, but the term is more particularly applied to a dynamo or alternator in which mechanical energy is converted into electrical energy. See Alternator; Dynamo; Electric Power.

Generoso. Peak of Switzerland, in the canton of Ticino. It rises from the S.E. end of Lake Lugano, near the Italian frontier, to a height of 5,590 ft., and is ascended by a rack and pinion rly. from Capolago. There is an hotel on a terrace, 3,960 ft., and another on the Kulm, at an alt. of 5,295 ft.

Genesee (pleasant valley). River of the U.S.A. Rising in the N. of Pennsylvania, it flows N. by W. and N. by E. through New York state to Lake Ontario, 7 m. below Rochester. It is 140 m. long and is remarkable for its falls at Portage and at Rochester, which provide waterpower.

Genesis (Gr., origin). First book of the Pentateuch or rather Hexateuch. The name is taken from the Septuagint title, the Generation of the World. The Hebrew title is In the Beginning. The book falls into two main divisions: (a) Creation stories and primeval history, Gen. i-xi, 26; (b) History and stories of the patriarchs, Gen. xi, 27-l, 26. It is composed of a number of narratives, more or less independent in origin and based upon popular tradition.

Division (a) includes stories of the creation of the universe, of the fall of man, of the deluge, and of the tower of Babel. Division (b) includes an Abraham narrative, a Jacob story, and a Joseph narrative. Some of the stories in these narratives (e.g. that of the deluge) bear some resemblance to

stories found in Babylonian and ancient Egyptian literature. The poem known as The Blessing of Jacob (Gen. xlix, 1-27) is probably one of the oldest pieces of composition found in the Hexateuch. See Bible; Hexateuch; Pentateuch.

Genetics (Gr. *genesis*, origin). One of the aspects of the problem of organic evolution. It seeks to describe the characteristics—likenesses and differences—as well as the variations, which occur in animals and plants which are related to each other, and to furnish theories and explanations of the origin of these. In other words, genetics deals with the fundamental problem of biology, namely, heredity.

Research in genetics may be carried out by four methods: (1) The biometric method, begun by Francis Galton in his Law of Inheritance, and greatly extended by Prof. Karl Pearson. Observers of this school deal with the facts of heredity from a statistical standpoint. They measure the degree of resemblances and differences between related individuals, plants or animals. It is an indispensable but limited aspect of the subject. (2) The Mendelian method, associated with the names of Bateson, Hurst, Punnett, and others in Great Britain. This is also in part statistical, but in this case the attention is directed not to the ancestry, but to the progeny. The biometric method looks backward, the Mendelian forward. In both the problem is that of genetic relationship. The result of this method is that it allows of the application of experiments, and this is its great advantage. It enables the observer to determine the distribution of differences among the progeny of an individual or a pair of individuals. (3) The cytological method, which attacks the problem from the aspect of the cell. Cytology seeks to ascertain what parts of the cell are concerned with heredity and in what way. This is a method of observation, not experiment, and is limited to the study of the dead stained cell. (4) The embryological method, which has assumed greater prominence in recent years. It is from experimental embryology that progress from this side is to be sought. See Biology; Cell; Cytology; Heredity; Mendelism; Somatogenesis.

Geneva. Canton of Switzerland, in the extreme W. of the country. Except for a small strip of 3½ m. where it adjoins the canton of Vaud, it is surrounded by French territory. Area, 108 sq. m. The river Rhône flows through it from Lake Geneva, at

the S.W. end of which it emerges and receives the river Arve. The surface is fairly level and is mostly covered by market gardens, vineyards, and orchards. Watch-making and the manufacture of jewelry are



Geneva arms

the chief industries of the leading towns. Next to Basel it is the most densely populated of the Swiss cantons. The majority of the inhabitants are French-speaking, and half are Protestants and half Roman Catholics. The young member of the Swiss Confederation, Geneva joined it in 1815. The capital is Geneva. Pop. 170,000.

Geneva. Largest lake of Central Europe, called by the French Léman. It lies between Switzerland and France. Its length is 45 m., its maximum width is 10 m., and where narrowest, between Pointe de Genthod and Bellerive, it is 2 m. Crescent-shaped, the N. shore measures 59 m. and the S. shore only 45 m. Area, 225 sq. m. Most of the S. shore belongs to the dept. of Haute-Savoie, France, but the remainder is bounded by the Swiss cantons of Geneva, Vaud, and Valais. The surface is 1,220 ft. above sea level, the depth varying between 240 ft. and 1,094 ft. It is an expansion of the Rhône, which

enters it as a silt-laden mt. stream at the S.E. end and emerges at the S.W. corner, clear and blue.

The waters of Lake Geneva are of a beautiful deep blue colour and remarkably transparent, especially near Geneva, the silt being gradually deposited and incidentally diminishing the water area. Like most of the Swiss lakes, it presents the phenomenon of the "seiches" or fluctuations in the level of the water, phenomena which are caused by sudden alteration in atmospheric pressure.

The level is higher in summer than in winter, owing to the melting of the snows. It is not so rich in fish life as many other lakes, but lake salmon, trout, pike, and carp are caught. Remains of lacustrine dwellings have been discovered on its shores. It is encoircled by rlys. and traversed by steamers, the first being built at Geneva in 1823 by an Englishman. The most important towns on its banks are Geneva, Lausanne, Nyon, Coppet, Vevey, Montreux, Villeneuve, Thonon, Évian-les-Bains, and Ouchy. See Lac Léman, F. A. Forel, 3 vols., 1892-1904.

Geneva (Fr. *Genève*; Ger. *Genf*). City of Switzerland, capital of the canton of Geneva. It stands at the S.W. extremity of the lake of Geneva, near the confluence of the Arve with the Rhône, 40 m. N.E. of Chambéry and 256 m. S.E. of Paris. It is the third largest



Geneva. Plan of the city and harbour on the Lake of Geneva



town in the country. The old part of the city, which is also the commercial centre, lies on the left bank of the Rhone which divides the city into two portions, connected by several bridges. Since the demolition of the ramparts in 1849-50, Geneva has rapidly spread, wide streets and commodious quays lining river and lake have been constructed, and breakwaters built to protect the port.

Although a famous religious, scientific, and literary centre, Geneva has few public buildings of outstanding interest. The Protestant cathedral, founded in the 10th century and consecrated in the 11th, was rebuilt in the 12th and 13th centuries and disfigured in the 18th by Renaissance additions. More tasteful is the adjoining Gothic chapel of the Maccabees, built in 1406 and restored in 1874-88. There are also Anglican and American churches. The town hall dates from the 16th century. The academy, founded by Calvin in 1559, has a library containing 150,000 volumes and 1,500 manuscripts, but the university buildings are modern.

There are a large, handsome theatre, an athenaeum, and many museums, including the Musée Rath, with pictures and sculptures; and the Musée Ariana. There are also historical, natural history, industrial, and archaeological museums. The educational establishments and technical schools are numerous, and there is an observatory. The Victoria Hall is a fine building. The city has large manufactures of watches, clocks, musical boxes, scientific

instruments, and jewelry, including enamelling and diamond cutting.

Mentioned by Caesar, Geneva became important under the Romans, and the seat of a bishop in the 5th century or earlier. It afterwards belonged to the Burgundians, the

classes. In 1798 the city became the capital of the new French dept. of Léman, and in 1815 joined the Swiss Confederation. Geneva is the seat of the League of Nations, whose first assembly opened in the Reformation Hall, Nov. 15, 1920. See Geneva: its place in the world, C. & J. Grande, 1920. Pop. 140,900.

Geneva. City of New York, U.S.A., in Ontario co. Situated at the foot of Seneca Lake, 50 m. S.E. of Rochester, it is served by the New York Central and Hudson River Rly. and the Seneca and Cayuga Canal. Nursery gardening is carried on, and motors, boilers, wagons, optical requisites, cutlery, and stoves are manufactured. Settled in 1788 it received a charter in 1898. Pop. 13,915.

Geneva Convention. International agreement signed at Geneva in 1906, having for its object the amelioration of the condition of the sick and wounded in war. Its main provisions are: Every belligerent is obliged to care for all sick and wounded soldiers who may fall into its power without regard for nationality, and any general who is compelled by *force majeure* to abandon the sick and wounded of his army must leave with them a portion of his field ambulances in order to relieve the



Franks, the Empire, and to the counts of Savoy. The prince-bishops of Geneva had a continual struggle to maintain their privileges; this culminated in 1535 in the epoch of unrest caused by the Reformation. The bishop transferred his seat to Gex, and in 1536 Calvin (*q.v.*) came to the city, acquired almost sovereign power, and ruled with a rod of iron. In the 17th century the dukes of Savoy attempted to recover Geneva, but it was defended by Protestant princes. In the 18th century dissensions arose between the privileged bourgeois and the downtrodden working



Geneva. 1. Mont Blanc bridge across the Rhone. 2. Cathedral church of St. Peter. 3. Place Neuve, with the theatre on the right



Geneva. View of the western end of the lake with the town of Geneva

enemy to some extent of the burden of nursing. This medical personnel is to be relieved of its duties as soon as possible by the enemy and returned to its own army, and is not to be treated like prisoners of war. In no circumstances may field ambulances—i.e. doctors, nurses, their assistants, transport drivers and escorts—be seized and held as prisoners of war, but the enemy may make use of their supplies for the treatment of his own casualties. The same rules apply to voluntary aid societies and also to chaplains.

Belligerents must furnish the enemy with a nominal roll of the sick and wounded who become their prisoners, also the identification marks found on the dead, and valuables, letters, etc., to which relatives of the deceased may be

entitled. As a compliment to Switzerland the heraldic emblem of a red cross on a white ground, formed by reversing the federal colours, is to be used as the distinctive sign of the medical service of all armies. The medical personnel must wear a brassard "fixed" on the left arm and any civilian assistants must, in addition, hold certificates of identity.

The use of the Red Cross as a trade mark is forbidden by the convention, and Great Britain in 1911 passed the Geneva Convention Act, which makes it unlawful to adopt for any purpose the emblem, or the words Red Cross or Geneva Cross, without the consent of the army council. The internment of wounded prisoners of war in Switzerland during the Great War was arranged in pursuance of the Geneva Convention. Military hospital ships fly the Red Cross flag, besides being painted white outside, with a horizontal band of green about a yard in breadth. See Red Cross.

Geneva Spirit (Fr. *genièvre*, from *genévrier*, juniper). Distilled spirit flavoured with juniper berries. The name is due to the popular confusion of the word with the town of Geneva. Quantities are made in Holland, notably at Schiedam, whence gin is often called Hollands or Schiedam. See Gin.

Geneviève (c. 422 - c. 512). Patron saint of Paris. Born at Nanterre, the daughter of a shepherd, she came under the influence



S. Genevieve haranguing the citizens of Paris upon the approach of Attila. From the painting of E. Delaunay
Pantéon, Paris

of S. Germanus, and at 15 devoted herself to the religious life, practising a stern asceticism, though not entering a convent. When Paris was taken by Childeric she was tireless in her efforts on behalf

of the citizens, and interceded with the king for the prisoners. She founded the church of S. Denis, and encouraged the people to resist Attila's invasion. Her tomb is in the church of S. Etienne-du-Mont, Paris.

Gengibrillo OR SWEET GINGER. Roots of a plant found in the mountainous parts, and along the rivers and streams, of Porto Rico. It contains a yellow juice of bitter taste which is used for dyeing and marking handkerchiefs. It has been found recently that the roots, sliced and dried in the sun and then powdered, yield a dye. Despite the name of the plant, its root affords evidence that it is in no way related to the ginger family. See Dyes.

Genie. Good or evil spirits, or manifestations between the spiritual and the animal in Oriental mythology. In the Hindu Vedas they are benevolent, but in the stories of The Arabian Nights and other Eastern tales they are often either evil powers or vaguely monstrous slaves of those possessing some power over their services. The plural is genii. See Mythology.

Genipap (*Genipa americana*). Small evergreen tree of the natural order Rubiaceae. Natives of tropical America and W. Indies, the leaves are opposite, leathery and lance-shaped; flowers bell-shaped, white, in clusters. The juicy fruit is as large as an orange, but tapering to each end, with a rather thick greenish-white rind.

Genista. Genus of shrubs of the natural order Leguminosae. They are natives of Europe, N. Africa, and W. Asia. Native British species are *G. anglica*, needle-furze, and *G. tinctoria*, dyers' greenweed (q.v.). See Plantagenet.

Genista. British mine sweeper. She was sunk by a German submarine while mine-sweeping off the W. coast of Ireland, Oct. 23, 1916. About 80 officers and men were lost.

Genitive (Lat. *genitivus*, belonging to birth). One of the cases (q.v.) in the inflexional languages. The term is really a Latin mistranslation of the Greek name *genikê*, properly the class-case, expressing in its widest application the relation between one thing and another. The ideas of source, origin, possession, are only special aspects of the general meaning. The inflexion survives in the English possessive (John's). See Grammar.

Genius (Lat. *genere*, to produce). In Roman mythology, the god of productivity, in a special sense a tutelary divinity. Every man was supposed to be accompanied from the cradle to the grave

by his genius, his higher and better self, by whom he was protected and influenced. Special days in a man's life, such as his birthday and wedding day, were made the occasion of festivity and rejoicing, and sacrifice was offered to the genius. Like the individual man, families, cities, states, localities, even baths and theatres, had their genius. In imperial times, the genius of the emperor was an object of worship, even during his lifetime. The genius of a place was usually represented in the form of a snake; that of a man as a youth dressed



Genipap. Foliage and flower head of the tropical American fruit tree

in a toga with veiled head, carrying a cornucopia. The conception is essentially Italian, although the daemon of the Greeks exhibited certain resemblances.

In modern language, the word genius is used with various shades of meaning. It denotes special aptitude for a particular branch of learning, as a genius for mathematics; distinguishing qualities or characteristics, as the genius of the Anglo-Saxon race; outstanding ability and a person possessed of such. See Demonology.

Gennadius, JOANNES (b. 1844). Greek diplomatist. Educated at the English college at Malta, he served in the embassies of Washington, Constantinople, and London. In 1882 he was appointed chargé d'affaires at Vienna, and he was minister plenipotentiary to London, 1885-92 and 1910-18. An honorary doctor at Oxford, Cambridge, and St. Andrews, his abilities were widely recognized, and his reputation as a bibliophile was considerable. He retired from the diplomatic service in 1918 and settled in London.

Genoa. Prov. of N.W. Italy, sloping from the Apennines to the Ligurian Sea. Its area is 1,582 sq. m. Curving round the Gulf of Genoa and protected by mts., the coastal tract, called the Riviera, is a famous winter resort. Fertile and intensively cultivated, it produces fruit, flowers, oil, and wine.

The people are hardy and industrious, and make excellent seamen. Iron-working and textile manufactures are carried on. Pop. 1,119,877.

Genoa (Ital. *Genova*). City and seaport of Italy, capital of the prov. of Genoa. It stands at the head of the Gulf of Genoa, between the rivers Bisagno and the Polcevera, 74 m. S.E. of Turin. The chief commercial port of the country, it is the seat of an archbishop, and possesses a university. The present walls, the third of a series, extend up the slopes of surrounding hills whose summits are crowned with strong forts, batteries, and outworks, enclosing detached houses, terraced gardens, orange groves, and open country. Erected in 1626-32, their circuit is nearly 12 m., and they are pierced by eight gates.

The old city has short, narrow, and dark streets; the modern quarters have broad, straight thoroughfares and fine parks and squares, while suburbs stretch for miles on each side. The cathedral, founded in 985, and rebuilt early in the 12th century, has since been much altered. There are many other churches of the 11th, 12th, 13th, and 15th centuries. Of the many Renaissance palaces, the most important are the Palazzo Municipale, the Doria, the Rosso, the Bianco, the Durazzo-Pallavicini, the Spinola, the Royal, the Balbi-Senarega, and the old palace of the doges. Many are triumphs of architecture, and most contain art treasures and collections of antiquities.

The city, which is rich in benevolent and educational establishments, has a university, a large public library, an academy of fine arts, a handsome theatre, the Carlo Felice, and a Verdi institute of music. The cemetery is remarkable for its wealth of sepulchral monuments. The well-appointed harbour, covering about 550 acres, admits ships of 30 ft. draught. There are a naval harbour, a marine arsenal, and graving, dry, and floating docks. The chief exports are rice, fruit, wine, oil, silk, hats, hemp, flax, cheese, flour, paper, soap, and marble. The main industries include iron-working, fruit-preserving, sugar-refining, tanning, vesta match and filigree making, and the manufacture of cotton cloth and macaroni.

Genoa was inhabited by Greeks in the 5th and 4th centuries B.C., and was already important in the



Genoa. Map of the province, showing the principal resorts of the Italian Riviera

second Punic War. It was destroyed by Hannibal 205 B.C., and rebuilt by the Romans. On the decline of the Roman Empire it fell under the sway of the Lombards and Franks. Sacked by the Saracens in 936, it developed the spirit of patriotism and independence and the naval prowess for which it has always been distinguished. Allying itself with Pisa against the Saracens, Corsica and Sardinia were jointly won from the Moslems about 1017-1021, but the division of the spoil led to jealousy and a long naval war which ended in the defeat of the Pisans at Meloria, Aug. 6, 1284. During the 11th century Genoa began to take under its protection the towns and

territory of the adjoining coast; from the close of the 13th to the middle of the 15th century the Genoese divided with the Venetians the exclusive commerce of Europe in the productions of Asia. Their success in commerce and banking excited the jealousy of the Venetians, and ultimately entailed open hostilities. The Genoese were defeated at the naval battle of Chioggia in 1380.

Meantime intestine struggles between the classes, between rival noble families, and the Guelph and Ghibelline feuds, weakened the state, which fell successively under German, Neapolitan, and Milanese dominance. After Chioggia Genoa became subject to France until



Genoa. Plan of the city and harbour of the chief port of Italy



1528. Self-government was restored by Andrea Doria and lasted until the French Revolution and the creation of the Ligurian Republic. In 1800 it sustained a siege by a British fleet and an Austrian army, and capitulated. It was delivered up to the French on their victory at Marengo. Early in 1814 it was taken by the British under Lord Bentinck, but at the Peace of Paris the city and territory of Genoa was assigned to the king of Sardinia and incorporated as a state into his dominions.

The birthplace of Columbus and Mazzini, the seat for centuries of the bankers of the Spanish sovereigns and the outfitters of Spain's fleets and armies, Genoa has been and is one of the wealthiest, most independent and prosperous of Italian cities, legitimately calling herself *Genova la Superba*. Pop. 300,139. See Genoa: How the



Genoa. 1. The lighthouse and the western part of the port. 2. Piazza Carvetto and Vittorio Emanuele statue. 3. Cathedral of S. Lorenzo. 4. General view of the town from the east

Republic Rose and Fell, J. T. Bent, 1881; The City of Genoa, R. W. Carden, 1908.

Genoa, GULF OF. Extension of the Ligurian Sea, Italy. From An-doria in the W. to Spezia in the E. the entrance is 88 m. across, and the gulf penetrates inland to a depth of 32 m. The coastal strip is divided between the Riviera di Ponente on the W. and the Riviera di Levante on the E. The city of

Genoa, from which it is named, stands at the head of the gulf.

Genre (Fr., kind, sort). Word meaning mode or style, but specifically employed to describe pictures of everyday life, such as domestic interiors, village scenes and manners. The French apply the term to various classes of painting by means of a distinctive epithet, as *genre du paysage* (landscape) and *genre historique* (his-

tory), but this usage destroys the peculiar significance of the word and is not legitimate. Dutch painters like David Teniers the Younger were masters of genre, as were David Wilkie and Erskine Nicol in the British school.

Gens. Term applied by the Romans to a body of people regarding themselves as descended from a common ancestor. Among famous Roman *gentes* were the *gens Julia*, the *gens Cornelia*, and the *gens Fabia*. In

Roman names the gens was indicated by the second name, e.g. Caius Julius Caesar. Broadly speaking, a gens was similar to a Scottish clan. See Rome: History.

Genserik. Popular, but less correct, name of Gaiseric (q.v.), king of the Vandals.

Gentian (Gentiana). Large genus of annual and perennial herbs of the natural order Gentianaceae, natives of all temperate and alpine regions. The leaves are mostly opposite and undivided, but trefoils in *Menyanthes*; the flowers funnel-shaped, purple, yellow, or white. The fruit is a two-valved capsule with many seeds. The flowers of the gentians are among the most beautiful of any plants, the blues often being of a more intense and vivid hue than can be found elsewhere. Of this kind is the Gentianella (*G. acutis*) of the Alps and Pyrenees, where the large flowers appear out of proportion to the small stemless plant that bears them. Another exquisite bit of colour, though on a smaller scale,



Gentian. Root, leaves, and flowers of *Gentiana lutea*

is the Spring Gentian (*G. verna*), and a taller plant is the Marsh Gentian (*G. pneumonanthe*).

The yellow-flowered *G. lutea* furnishes the gentian-root used in medicine. It contains a bitter principle and is used for stimulating the flow of the gastric juices and promoting digestion. The official preparations are the extract, dose 2-8 grains; the compound infusion, $\frac{1}{2}$ -1 fluid oz.; and the compound tincture, $\frac{1}{2}$ -1 fluid dram.

Gentiles (Heb. *gôyim*, Gr. *ethnê*, Lat. *gentes*). Scriptural terms used variously in the O.T. and N.T. Sometimes rendered "nations" and sometimes "heathen," it was originally employed by the Jews in a general sense to mean any nation; or applied figuratively to animals and insects. With the development of the Hebrew idea of "the chosen people" the term Gentiles was applied by them to nations other than themselves. Later, as in the case of the Gr. *barbaros*, it became a term of contempt or reproach, but it has been used by Jew and Gentile alike as a synonym for the heathen.

Gentili, ALBERICO (1552-1608). Italian jurist. Born at Ancona, Jan. 14, 1552, he migrated to England in 1580. He taught law at Oxford until 1590, when he moved to London, where he died June 19, 1608. His works *De Jure Belli* (On The Law of War), 1588-98; and *De Legationibus* (On Legations), 1585, are among the European foundations of international law.

Gentilly. Town of France, in the dept. of Seine. It stands on the river Bièvre, between Paris, of which it is virtually a suburb, and Sceaux, 4 m. S. of the city, with which there is tramway communication. Although largely residential, the town has manufactures of soap and

biscuits, tanneries and large quarries in the neighbourhood. Close by, on the right bank of the Bièvre, is the hospice of Bicêtre, which has accommodation for over 3,000 infirm and insane persons. Pop. 10,744.

Gentleman (Lat. *gentilis*, belonging to a clan). Term which at different periods has had different and never clearly defined meanings. Patents of gentility conferring a coat of arms without a title were sometimes bestowed by the sovereign, now only by the Herald's College; but the right to wear coat-armour—the test of a gentleman most persistently put forward, and in some circumstances officially recognized—does not apply to every case. Nowadays the term is commonly used to indicate certain standards of behaviour, apart from considerations of birth or rank. In 1920 the French Academy gave the word a place in the official dictionary of France. See Lady; Nobility.

Gentleman's Magazine, THE. The first monthly periodical of its kind in England. It was started Jan. 1, 1731, at St. John's Gate, Clerkenwell, by Edward Cave, with the purpose of presenting news in a condensed form. Cave's pseudonym Sylvanus Urban was adopted by his successors. The magazine was modernised in 1868 and ed. successively by Richard Gowing, Joseph Hatton, Joseph Knight, and A. H. Bullen. The copyright belongs to The Times.

Gentlemen-at-Arms. Personal bodyguard of gentlemen "extracted of noble blood," established by Henry VIII in 1509 under the title of Gentlemen Speers and reorganized in 1539 as Gentlemen Pensioners. Except the Yeomen of the Guard it is the oldest military corps in England. In 1834 William IV altered its name to the King's Bodyguard of the Honourable Corps of Gentlemen-at-Arms, and in 1862 it was reorganized on a military basis. It now consists of a captain, a lieutenant, standard-bearer, adjutant—styled the clerk of the cheque—a sub-officer, and 39 gentlemen-at-arms, all officers of the regular army who have received decorations. Their office is to attend the royal person on all occasions of public solemnity. See Household, Royal.



Gentlemen-at-Arms. Dress of officer in the corps

Gentz, FRIEDRICH VON (1764-1832). German diplomatist. Born at Breslau, May 2, 1764, he was educated at Berlin and the university of Königsberg. In 1785 he entered the public service of Prussia, and on the outbreak of the French Revolution his literary talents found full play. His uncompromising dislike of the revolution necessitated his quitting Prussia in 1804, and he went to



Friedrich von Gentz, German diplomatist

Vienna, passing the rest of his life in the service of Austria. He visited England and received money for writing against Napoleon. He was secretary to the Austrian representatives at Vienna in 1815, and died July 9, 1832. Many of his voluminous writings have been published, as have his Diaries, 1800-28.

Genus. Group of species whose close resemblance to one another in important anatomical details shows them to be related. Genera are distinguished from each other by greater and more important differences than those that divide the species in the same genus. See Species.

Genu-Valgum (Lat., knock-knee). Deformity in which the knees touch. It is most often due to rickets. See Knee.

Geocentric (Gr. *gê*, earth; *kentron*, centre). Term used in astronomy for describing the motions and positions of planets, etc., as viewed from the earth. See Astronomy.

Geodes (Gr. *geodês*, earth-like). In mineralogy, round hollow concretions often containing crystals of various minerals. Called potato stones in some districts, and aetites or eagle stones by the Greeks, they have been supposed beneficial in pain.

Geodesy (Gr. *geodaisia*, land division). Science of the measurement of the globe, i.e. of geodetic surveying as distinct from the surveying of plots of land for farms, railways, etc. Dicaearchus, about 4320 B.C., and Eratosthenes, c. 200 B.C., both estimated the circumference of the earth, and various attempts were made by Hipparchus, Ptolemy, and, later, Arabian mathematicians, Galileo, Newton, etc., to estimate the dimensions of the earth. It was not till 1615, however, when the system of triangulation was first used, that anything approaching accuracy was reached.

The system of triangulation consists in measuring a succession of angles and sides of triangles on the earth's surface. A base line is

chosen, and its length carefully measured. From this base line the distances of any other points may easily be calculated by measuring certain angles. Geodesy consequently involves the use of the most delicate and accurate theodolites and theodolites. *See* Ordnance Survey; Surveying; Theodolite.

Geodynamics. Science relating to the forces latent in the earth's mass. They arise from its size and constitution, as well as from the fact that it is in movement, and is subject to gravitational forces exerted by the moon, the sun, and other members of the solar system. *See* Earth; Sun.

Geoffrey of Monmouth (c. 1100-54). English chronicler. He was archdeacon of Llandaff c. 1140, and bishop of St. Asaph in 1152. His great work is the *Historia Britonum*, finally published about

1147, a legendary history of the English people, based on the stories of Nennius and on ancient Breton myths. It preserves numerous stories of great value (e.g. the histories of Arthur and his court, of Lear, Brutus, Vortigern, and others), and is of great importance in literary history, though its historical reliability is small.

Geographical Society, ROYAL. Society for the promotion of exploration and discovery and the improvement of geographical teaching in universities and schools. Formed in 1830, it has a house at Lowther Lodge, Kensington Gore, S.W., where its afternoon meetings are held, the evening meetings taking place in suitable large halls. The Map Room and Museum at Lowther Lodge are open to the public. The *Geographical Journal*, the organ of the Society, is issued monthly.

he borrows facts about the continents which preceded those now in existence, in order to explain the existing land forms which restrain or incite human activities.

The subject matter of meteorology becomes climatology for the geographer who wishes to understand the circulation of the atmosphere in order to realize the effects of air currents, winds, storms, etc., and the rains they bring, upon the labours of men. The conclusions of the biologist are useful mainly when they show what are the precise plant regions and the definite animal zones.

Throughout the ages geographers have tended to adhere to one or other of two schools of thought, the physical and the humanistic, in accordance with the emphasis they laid upon the environment or the men within it. At present geography would appear to have reached a definite compromise between these two methods.

Analysis of Environment

From the recent advances in other sciences the geographer is beginning to see his way towards separate regional analyses of the world under the heads of land forms, climate, forms of life; he can indicate the relation between these elements of man's environment, and is on the eve of a classification of the physical world into precise regions, so that the physical geographer—the word physical here implying attention to everything which does not deal with man as a sentient being—is almost prepared to submit a thorough analysis of man's environment.

Being supplied with these regional analyses of the world, the humanist has two problems to face, first, the interaction between one type of man and different regions and, secondly, that between different types of men and one region. For example, there are the problems of the Frenchmen of the Paris basin and of the French portion of the Mediterranean area, and of the Californian, the Chilean, and the South Australian in relation to their environment.

But having worked out his results in comparison with the main natural regions of the world, the humanist is faced by a new difficulty. The world is administered politically in regard to empires, kingdoms, and republics, and the political frontiers introduce complications. It is his province to determine the relation of the several states to the natural regions and to explain the size and shape of countries, and the distribution of their inhabitants, in relation to his ideal analysis of the world into regions.

GEOGRAPHY AND ITS USES

L. W. Lyde, Prof. of Economic Geography, Univ. Coll., London, and B. C. Wallis, B.Sc., Author of *A Geography of the World*

This general article on the science of Geography is supplemented by those on Glacier; Mountain; River and other of the earth's physical features. See also Geology; Map; etc.

Geographical study begins with topography, the accurate description of all parts of the earth, the people who live there, the lives they lead, the kinds of plants, animals, minerals found there; and early in the 19th century the number of topographical facts was so huge that geographers began to compare and classify them in order to reduce the content of geography to manageable dimensions. These processes have resulted in an assumption that the earth comprises a series of definite regions which are so much alike that a clear conception of one specimen of a region suffices for the understanding of the similar areas elsewhere.

The standard illustrative region is the area bordering the Mediterranean, which has warm, wet winters, and hot, dry summers, a characteristic natural vegetation, cultivated crops of a definite type. A knowledge of the shorelands of the Mediterranean Sea implies also a knowledge of California, parts of Chile, the Cape of Good Hope district, and the South of Australia, all of which are Mediterranean regions in this sense.

The regional conception, however, is insufficient beyond a certain point, for it implies no relation between the configuration of the land, the occurrence of useful minerals or, most important of all, the character and distribution of the population. Within definite limits, however, the regional con-

ception simplifies the geographical story and is, therefore, useful.

During the centuries of exploration geographers were also concerned with the earth as a whole, with the physical forces which influence men's lives, with the scientific classification of all forms of life, including man, and with the history of human development. They have always been interested in the physical sciences, astronomy, geology, meteorology, and biology, and in the human sciences, ethnology, sociology, economics. Since these sciences steadily developed their special knowledge of one aspect of the universe, geographers used their conclusions as a basis for the explanation of many of the observed facts of topography.

Modern Geography

Modern geography therefore includes, primarily, a certain amount of gazetteer information, and secondarily, the application of certain scientific conclusions to human activities; it is the study of the earth as the "home of man," of "man's place in nature," and "man and his work." But although the geographer is indebted to other scientific studies, he does not make scientific data a portion of the content of geography until he has applied them to the life of man. From astronomy he borrows facts about the earth as a planet to explain the consequences for man of the daily march of the sun in the sky and the rhythmic swing of the tides in the oceans. From geology

This political grouping is of considerable importance for two main reasons. The facts concerning man's labours are usually recorded in terms of political areas, countries or provinces, so that the geographer has some difficulty in determining the sum of human activities in a given region which includes part of two or more countries. At the same time geography is not a study of purely academic interest. Everybody is interested in topographical facts of some kind, if only because he reads his daily paper with interest, and the practical aim of geography is to present so ordered a conspectus of man's life and work in the world of to-day that the student may be able to grasp the complete significance of the topographical facts presented.

Changing and Stable Elements

The ordered view of the world so obtained implies a study of the earth as an environment by natural regions; an acquaintance with the human adjustments to these specific environments and, finally, a knowledge of the world's political units as they are related to the ideal view of the world previously obtained. The topographical subject matter of geography is ever-changing; a new railway or canal, the conquest of the air, a new application of science to industry may alter all values, so that the geographer is required to confine his attention to the more permanent and stable elements of the world and to be ready to adjust his conclusions to the new circumstances as and when they occur.

The geographer is, however, above all else an inquirer, carrying his investigations wider and deeper into man's manifold activities, and at the present there are two lines of fruitful investigation which are being followed. On the one hand, especially upon the Continent of Europe, geographers are completely analysing comparatively small portions of the world, such as Flanders, testing the conclusions already attained on a broader basis and collecting new facts; on the other hand geographers are utilising the conception that the world as a whole is a unit to demonstrate that there are certain fundamental conditions or relationships which can be changed only slowly and after a long interval. For example, some three-fifths of the world's raw cotton is grown in the United States, giving that country a dominant position in relation to the cotton markets of the world.

This is a fundamental geographical fact, for it is barely conceivable that any progress in cotton grow-

ing elsewhere in response to any stimulus whatever can materially alter the situation. If India and Egypt improved their output, the States would probably improve in equal proportions; if cotton were grown extensively elsewhere under a system of bounties or artificial encouragement the States would safeguard their interests and take steps to maintain the relative position. The geographer recognizes the nature of the situation and it is his business to ascertain completely the consequences and causes thereof. Contrast, however, the position of the former Russian Empire as a former grower of one-tenth of the world's wheat. It is fundamental that wheat is grown extensively in Russia, but the proportion neither is nor can be constant; and the geographer demonstrates the reasons why wheat is grown and why the quantities grown in Russia must fluctuate in comparison with the total world's output.

The Geographer's Method

The geographer, therefore, takes each country and describes it, so as to specify (1) the type or types of physical conditions of which it is comprised; (2) the kinds of people who inhabit it; (3) the way in which these people react to their environment in comparison with the lives of similar peoples elsewhere and with the lives of different peoples in similar areas; and (4) the relation it bears to the world as a whole. He lays emphasis upon the life and work of man to-day, and in so doing provides suggestions for the immediate future which will control to some degree man's development in the next few decades.

B. C. WALLIS

The value of geography in education is due to its power of equipping the young citizen with a wide outlook, a sense of perspective and proportion, a familiarity with methods of scientific analysis and a certain manipulative facility. For in giving the wide outlook it does not sacrifice accuracy of detail, while its disregard of non-essentials and its many aspects tend to marked clearness of generalisation along with a multi-fold adaptability. The observation of facts, their verification and their embodiment in a map, are valuable if mechanical, processes within the power of any normal child; the synthesis or analysis of the whole human environment is a study worthy of the close attention of university honoursmen. The relation of natural occupations to natural conditions and natural products involves wide borrowing from such various sciences as

botany, geology, and anthropology. If, therefore, we assume that the ultimate aim of geography is to study the interaction of man and his environment, it is obvious that only scientific methods will carry conviction and that such methods presuppose an adequate knowledge of the fundamental data of the problem. The first step in the collection of such data is the patient observation of facts—extensively and intensively; and extensive observation is the special work of explorers. The general trend of such work in recent times has, therefore, a peculiar significance in relation to this ultimate aim; and among the most significant events of the past few years are undoubtedly the conquest of both poles, the reconstruction of the interiors of Asia and Australia, the partitioning of Africa, and the advances in oceanography.

For instance, already we see that the meteorological work carried out in the Antarctic continent seems likely to be a step towards forecasting the failure of monsoon rains in India during the succeeding summer, i.e. a step towards avoiding all the horrors which used to be associated with unforeseen famine in that populous country. The development of Africa, again, seems likely to test vitally the value of European systems of education; for the Bantus, at all events, are a virile, but illiterate people, who are demanding education, and education of the same kind as is given to white children.

International Cooperation

The essential fact is that to-day although the world is practically known, large areas of it still have to be surveyed and properly mapped; and the latter task involves a wide scheme of international cooperation, which is already illustrated by, e.g. the International Geodetic Association, the International Council for the Study of Sea Fisheries, and the International Map of 1:1,000,000.

Side by side with the extensive work of the explorers has been the intensive study of the more advanced countries of the world, leading to most useful generalisations based on detailed and precise knowledge of the conditions—physical, climatic, zoological and botanical, etc.—obtaining in regions of which we have relatively trustworthy historic records for hundreds of years back. And this intensive work is training the new type of explorer, who will organize the new lands—discovered by the old type—on lines favourable to the best development of man in the particular region.

In the organized treatment of all the material accumulated by exploratory and descriptive geography, the modern science of geography fills the gap between astronomy and geology on the one side, and the biological and kindred sciences on the other; but it is impossible to define exactly the precise limits of each, even when it is not a science in the early stages of development. The extreme physical aspect of geography limits it to the investigation of the earth's surface features; the extreme humanistic aspect limits it to man's relations to these features. But any regional synthesis must include vegetational and other biological phenomena, and any discussion of human distributions must include mathematical problems and representations of space relations. The truth lies between the two extremes. We investigate and classify physical phenomena, with special relation to man. Thus, the importance of St. Helena had a different value according as it was estimated by sailors who knew only of wind as motive power, or by sailors who knew also of steam.

Physical and Human Aspects

Logically, therefore, modern geography has three main aspects, the physical base, the human note, and the interaction of the two, and the physical should be treated first. But the physical implies the mathematical; for the object of making careful observations and investigations of the phenomena is to describe and compare various earth-forms and natural regions, and its result is their permanent representation in such a way as to exhibit their location and their space relations. At the same time every precaution must be taken against over-emphasising the importance of the mathematical determination of forms and positions, or the physical determination of the "structure, process, and stage" of the forms thus determined.

Briefly, the geographical problem is the quantitative proof of the manner in which, and the degree to which, the features and phenomena of the earth's surface control the distribution of all mobile elements and organisms; and, though the work cannot go on without the statistical distributions of the map, any more than an epic can be written without an alphabet, it is the dynamical distributions that are epical, and man is the supreme figure. The key words, therefore, are "control," "response," "interaction." The control is mainly physiographical, the response is ontographical, and the interaction is geographical.

The most difficult of all the problems involved, and perhaps the most essential, is to determine exactly what are the relations of the distinctively mobile distributions to the more or less fixed environment, and to express these quantitatively—not only in the "pictorial statistical analysis" of a map, but also in other forms. Already considerable progress has been made in one or two directions towards demonstrating, *e.g.* the exact relation of relief to climate, of climate to plant growth, and of natural vegetation to agriculture. For instance, we know with considerable accuracy the gradient (30° to 45°) and exposure, so as to get a maximum of autumn sunshine, desirable for a champagne vineyard, and the relations of sunlight, temperature, and humidity that give Cognac a monopoly of real brandy.

Political Geography

Similar considerations are true even of political geography. Thus, the exact relation of methods of maintenance to the development of social and political institutions is no longer merely a plausible hypothesis; and, even though we cannot state the relation as a fraction, it is a truth needing no statistical demonstration that, *e.g.* in a region of winter rains, flanked by snow-clad mountains that guarantee abundance of irrigation water in summer, there is no imperative necessity for the work of one season to supply the needs of two. But there are even purely human phenomena about which we can give statistics. For instance, in regard to tropical colonisation, we know the exact wet-bulb temperature at which white men find work impossible even in the presence of a good current of air, and we know that this is the decisive factor. Where the climograph (*i.e.* the average wet-bulb reading) for half the year reaches 70° F., the conditions are not suitable for white men; and this definite climatic boundary includes a great portion of northern Australia.

Similarly it is possible to give definite statistics—though they greatly need to be extended—about the relation of bright sunlight in dry air to the behaviour of, *e.g.* school children in England, textile operatives in New England, and hostesses in Nairobi—where everyone lives in a state of chronic irritability from overstimulation by the bright light. That is to say, we have taken some preliminary steps towards determining the influence of environment even on mental processes.

The development of geography in modern times along such lines has been astonishing, especially in France and Britain; and, as the development has been in both material and method, there ought to have been corresponding development in the standing of the science, especially as both material and method can be used, and are used, in such a way as to be truly and permanently educational. This involves a habit of using books and maps, a determination to test all information in such a way that it becomes a truth based on your own first-hand knowledge, and a power of outlook, which implies investigation, judgement, inference, and interpretation. It is, however, peculiarly modern in its method of basing a wide "world" outlook on a close contact with a small "home" area; and it is interesting to notice how directly this method may be related to the significant overflow of European population into larger and less occupied areas. Thus, from lands of ancient liberty and good education, *e.g.* Switzerland, emigration is mainly of teachers and skilled workmen, who are practically bribed to go, and are not likely to be bamboozled by lying advertisements and unreal prospects; but from lands of poverty and ignorance, *e.g.* Russia, the motive impulse is necessity, and the emigrants are at the mercy of the government and capitalists of their new home.

Geography and the Future

As citizen, or as emigrant, one must have a geographic background if one is to keep order in the complex mass of details which enter into one's daily life, and that background to-day is worldwide. To anyone with any vision of the British Empire, Egypt may be one of the vital spots on the mental horizon. For the Great Circle—*i.e.* the shortest possible route—from Britain's most distant colony, New Zealand, to her nearest colony, Newfoundland, passes through Cairo; and the Suez isthmus, through which commerce deviates from the mathematical Great Circle, is not only the link between millions of souls and acres for which Britain is responsible, in Asia and Africa, but also the point on which the various nations of the Empire can converge most easily in peace or war. If one re-writes Imperial problems in such geographical terms, one begins to realize what width of vision might be given to the British people if, when young, they were properly trained in the great Science of Outlook.

L. W. Lyde

Geoid. Term invented to describe the shape of the earth. Like the other planets, the earth is spherical, but not a true sphere. The bulge of the earth which makes its equatorial diameter longer than that through the poles causes the earth to be classed as a spheroid, while minor irregularities have led to the use of the term geoid, which is equivalent to saying that the earth is shaped like itself and like nothing else. See Earth.

Geok Tepe. Village in Turkistan. It is 28 m. from Ashkhabad on the Transcaspian Rly. It is noted for its fortress, an immensely strong building erected by the Turkomans, which in 1880 was stormed by the Russians.

Geological Society. British learned society, the oldest geological society in the world. Founded in 1807 and incorporated by royal charter in 1825, it began as a dining club, meeting at the Freemasons' Tavern, Great Queen Street, London, W.C. Rooms were afterwards engaged at Garden Court (Temple), Lincoln's Inn Fields, Bedford Street (Covent Garden), until, in 1828, apartments were granted at Somerset House, Strand. In 1874 the society removed to its present quarters at Burlington House, Piccadilly, London, W.

The society maintained a valuable museum of rocks, minerals, and fossils until 1911, when the collections were dispersed owing to the growth of the library. British collections were then presented to the museum of practical geology (Jermyn Street, London), and collections from abroad to the British Museum of Natural History (Cromwell Road, London). The society meets fortnightly from November to June inclusive. Its publications include the society's Quarterly Journal, Abstracts of Proceedings, and Record of Geological Literature. Two series of its valuable quarto Transactions were published between 1811 and 1856, but none have been issued since. The United States has a geological society with aims similar to the British one. Papers read before it are published in the society's Bulletin.

Geological Survey. British government department charged with the investigation of the geology of the British Isles and the upkeep of the museum of practical geology. The field work of the survey officers includes a survey of the rocks and soils, their mineral contents, inquiries into questions relating to water supply for the dual purpose of the advancement of science and the accumulation of

facts useful to miners, farmers, architects, builders, engineers, and manufacturers.

In 1815 William Smith issued the first geological map of England, and Sir Henry De la Beche followed this great work by beginning to plot the geology of the mining areas of Cornwall and Devon on the Ordnance Survey "one inch" maps then being published. This work, started as a private enterprise, soon received national recognition, and in 1835 De la Beche was "director of the ordnance geological survey." From these beginnings the department grew under the successive control of De la Beche, Sir R. J. Murchison,

and A. C. Ramsay, while other distinguished geologists were also connected with it.

The department issues solid and drift maps, memoirs on special subjects, and maintains the geological collection which includes remarkable relief models of Ingleborough and district, Assynt, etc. The collection is housed at the headquarters, the museum of practical geology, Jermyn St., London, S.W., a building erected by the government and formally opened by the Prince Consort in 1851. Students and inquirers are welcomed at the museum which is free to the public at certain specified hours.

GEOLOGY: THE READING OF THE ROCKS

J. W. Gregory, F.R.S., Professor of Geology, Glasgow Univ.

This work contains articles on all the important geological terms, e.g. Devonian; Pliocene; Triassic, etc. Other cognate articles are Fossils; Meteorites; Rocks. See also Earth; and biographies of Geikie and other geologists

The word geology means literally "a discourse on the earth" or "the science of the earth." Geology is the science which interprets the evidence afforded by the materials of the earth as to its composition, structure, and history. It investigates the minerals and rocks of the earth's crust by aid of mineralogy and petrology; it determines the mutual relations of the constituent layers, which give the earth its general structure by tectonic or structural geology; it studies the forces which act on the earth by dynamic or physical geology; and it compiles the history of the earth from its beginning to the earliest human records by historical or stratigraphical geology. The last-named is largely dependent on the evidence of the remains of the successive animals and plants which have lived on the earth, and these fossils are the subject matter of palaeontology.

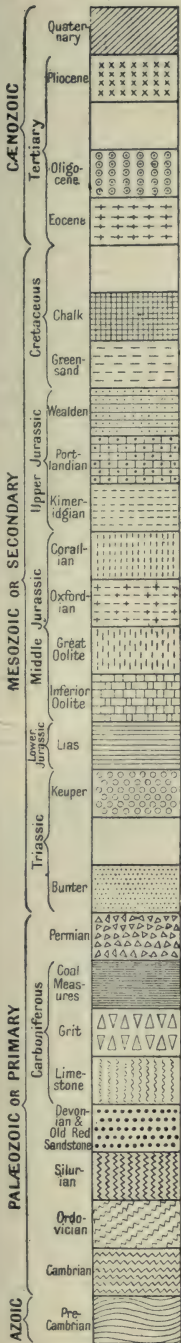
ORIGIN AND GENERAL STRUCTURE OF THE EARTH. The origin of the earth and of the other members of the solar system was long attributed to consolidation from a hot gaseous nebula—the theory of Laplace. In recent years the view that has found most favour among geologists is that the earth was formed from vast swarms of meteorites, which are scattered through space in infinite numbers. When a meteorite enters the earth's atmosphere it becomes incandescent, owing to the friction of the air, and is then known as a shooting star or meteor. Meteorites when travelling through outer space are extremely cold; but in a dense swarm they are heated by collisions

and pressure and may be fused into a compact body.

The largest of the meteorites known to us are composed mainly of iron and nickel, with a small proportion of stony materials. If a swarm of meteorites is melted and formed into one mass, the heavy metals would naturally sink toward the centre, and the lighter stony matter would collect on the surface and solidify as a rocky crust; the moisture would condense on the surface in sheets of water and the gases given off would surround it as an atmosphere. This arrangement occurs in the earth, which consists of a central core surrounded by three distinct layers. The central core is known as the centrosphere from its position, and as the barysphere owing to the heaviness of its constituents. It is enclosed in the rocky crust of the earth which is known as the lithosphere; upon this in turn lies the hydrosphere, which contains all the waters near the earth's surface, alike in the sea and rivers, in rocks and in clouds. Surrounding the whole is the gaseous envelope, the atmosphere.

The Centrosphere or Thermosphere

The centrosphere forms the largest part of the earth, but as it is inaccessible our knowledge of it is gained indirectly, especially from the study of earthquakes and measurements of the weight of the earth. Of this central mass two facts are certainly known. First, it is much hotter than the rocks on the surface, since on descent into a deep mine the temperature rises and the water from deep springs is hot. The increase of temperature



Alluvial gravels, blown sands, estuarine mud, boulder clay, and other glacial deposits; cave earth with recent fossils. Deposits yield peat, gravels, and brickearths. Typical localities are Solway Firth, Chesil Bank, Holderness.

Mainly sands and loams, various beds of crag. Chief economic products are marl and phosphates. Main districts are Norwich, Cromer, Aldborough.

Miocene rocks fall into sequence here. They are not represented in Britain, being chiefly found in the Mediterranean area.

Sands and clays predominate. Building stone, cement, and brickearth are obtained. Chiefly found in the Hampshire basin (Isle of Wight).

Sands, clays, and pebble beds. Chief clay, London clay, is widely spread over the London basin and exceeds 450 ft. in thickness. Chief economic products are glass-sands, brick and tile earth.

Maestricht chalk is not represented in Britain.

Chalk and chalk marl, yielding cement and lime, occur mainly in the hill country of the Lowns and Chilterns. Beds may be more than 1,500 ft. thick.

Mainly sands and clays providing road-metal, cement, and phosphates. Notable outcrops are found at Leith Hill, Blackdown Hills, Hunstanton, Warminster.

Chief clay of the Weald, with some sands, containing iron-ore, at Claxby. Away from the Weald, where it is 1,500 ft. thick, outcrops at Swanage and in the Isle of Wight.

Sands and limestones, yielding building stone and Purbeck marble. Chief localities are Portland, Purbeck, Swindon, and Aylesbury.

Clay containing fossils of saurians. "Kimeridge coal" yields oil-shale. It occurs at Swindon, in the Vale of Pickering, and Cromarty.

Limestone and clay with some grits. Chief products are lime, iron-ore at Westbury, etc., and building stone. Main outcrops are at Weymouth, Oxford, Filey, and Brora in Sutherlandshire.

Clay of the Oxford basin of the Upper Thames, yielding brick and tile earth. Away from the Thames it occurs at Peterborough and in the island of Skye.

Mainly limestones yielding lime and local supplies of building stone. The rocks also provide Bath stone, Stonesfield slate, and fuller's earth; they range from Weymouth to Bedford, East Yorkshire, and Brora.

Clay and limestone, estuarine deposits, yielding building stone and lime as well as iron-ore at Northampton and Evesdale. Outcrops occur at Cheltenham, Lincoln, and in Skye.

Limestones, clays and shales. Economic products are alum, jet, lime and cement, and, notably, iron-ore at Cleveland and Frodingham. The rock is found in Yorkshire, Skye, and Antrim. Besides insect and plant remains it has ichthyosaurian fossils.

Marls, providing building stone, gypsum, and rock salt. Outcrops occur on the flanks of the Southern Pennines and in Antrim.

Triassic limestones, mussekalk, etc., are not represented in Britain.

Sandstone and pebble beds, usually in hilly country—Cannock Chase, Bridgnorth. Economic products are building stone and foundry sand. Typical Bunter heath country is found in Sherwood Forest.

Marls, sandstone and limestone, yielding building stone. Outcrops are found at Dumfries, Penrith, Sunderland and Doncaster.

Shales with coal and sandstones, yielding coal, ironstone, fire-clay, building, paving, and grind stone. For location see coal-fields map.

Sandstone, grit, yielding chert, building, mill and paving stone. Outcrops occur in the Pennines, South Wales, and the Mendips.

Mountain limestone yielding lime, marble in Derbyshire and West Meath, lead-ore, and cement stone. The rock is responsible for scenic beauties in Derbyshire, the Mendips, the Isle of Man.

Sandstone and marls with local limestones, yielding marble, slates at Delabole, Cornwall, building stone and Gathness flags. Outcrops are found in the Orkneys and Shetlands, Hereford, Devonshire, Gathness and Forfar.

Shales with limestones yielding flags, building stone and lime. The rocks are found at Ludlow, Wenlock, Llandovery, in the Pentland Hills.

Limestones and shales yielding lime, phosphorite, jasper, oil-stone and slates. Outcrops occur at Bala, Llandellio, Arenig, in the Lake District, Llanwrthwl and Llanwrthwl.

Shales with sandstone and slates, yielding marble, flags, building stone, road-metal and slates. The rock is found at Tremadoc, Skye, Malvern, Harlech, Wexford, in the Lake District and in the Isle of Man.

Mainly igneous without fossils, supplying road-metal and stone for local building purposes. The rock is found in North Scotland, the Hebrides, Donegal, Charnwood Forest and the Wrekin.

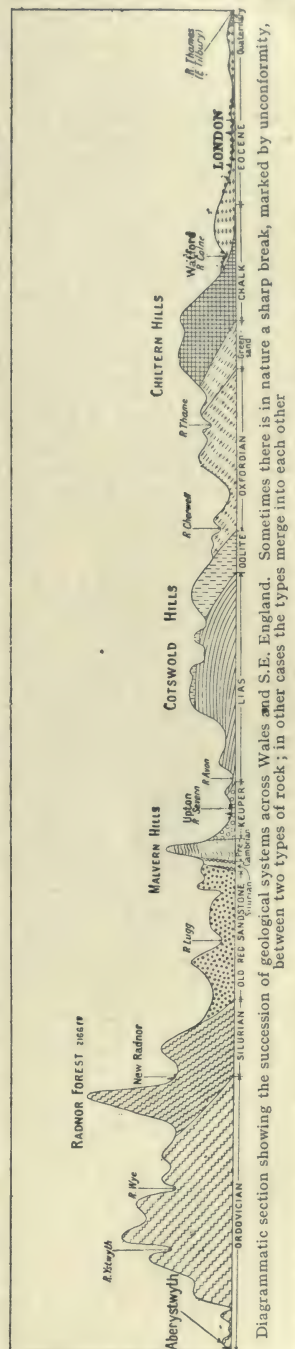


Diagram indicating the geological progression in the earth crust of the British Isles, from the Azoic, or lifeless, to the Cenozoic, or recent and existing, age. The rock sequence here shown is representative of the world, except for three systems which do not occur in Britain, but are shown blank in their proper positions

GEOLOGY: THE SEQUENCE OF THE ROCK SYSTEMS

has been generally accepted as about 1° F. for every 53 ft. of descent from the surface; according to some measurements the increase is only 1° F. for every 80 ft. of descent. Even if the rate becomes slower with increasing depth only a few miles below the surface the heat must be intense. In addition to its other names this central mass has, therefore, been called the thermosphere, by those wishing to direct attention to the important consequences of its high temperature.

Internal Composition

The second fact proved about the central core is that its materials are much heavier, bulk for bulk, than the rocks of the earth's crust. These rocks weigh from about $2\frac{1}{2}$ to 3 times as much as an equal bulk of water; the whole earth, however, weighs nearly $5\frac{1}{2}$ times that of an equal bulk of water. The material in the interior of the earth is therefore more than twice as heavy as the rocks of the crust. This fact is probably due to the high proportion in the interior of various metals, especially iron and nickel. The central mass is different in composition from the rocks of the crust; its material has been termed *Geite*, i.e. earth-rock. It is probably similar to the largest meteorites, which consist of iron with from 6 p.c. to 10 p.c. of nickel; hence probably both the bulk of the meteoritic material and of the earth consist of iron and nickel. That the lithosphere is only about 50 m. thick, below which the earth consists of *geite*, is probable from the phenomena of earthquakes and the distribution of radium.

THE ROCKS OF THE EARTH'S CRUST. The lithosphere is the part of the earth with which the geologist is most concerned. It consists of rocks, which are masses of fairly uniform coherent material, such as granite and sandstone. Rocks supply the materials for the history of the earth, as each of them retains characters which indicate the conditions under which it was formed, and often reveal its age. Study of a rock will usually determine whether it was formed on land or sea; if on land, whether under a moist or a desert climate; if in the sea, whether near the shore or in a deep ocean; and if formed beneath the earth's surface, at what approximate depth.

Rocks are of two main kinds. Those of the first kind are formed by the solidification of molten material; they are sometimes called *primary*, as they have been formed directly from the molten constituents of the earth; and as their molten condition was due to in-

tense heat they are also called *igneous*. In some cases these rocks have solidified on the surface of the earth in sheets which have been discharged from volcanoes. They are then called *volcanic rocks*. If they solidify very quickly they form glass such as *obsidian*; if they cool very slowly and under heavy pressure, the whole of the material will solidify in a crystalline state. Under intermediate conditions a primary rock may be composed of a mixture of crystalline constituents and glass. Rocks which have consolidated at a considerable depth are known as *Plutonic rocks* (after Pluto, the god of the infernal regions) and owing to their slow cooling under great pressure none of their material can solidify as glass; they consist wholly of crystalline constituents and are accordingly described as *holocrystalline*.

Simple and Compound Minerals

The plutonic rocks consist, therefore, of an aggregate of crystalline materials, each of which is a simple mineral. The term mineral is used in a broad sense, as in mineral kingdom, to include all the inorganic constituents of the earth. The simple minerals or mineral species are those which have a definite chemical composition, which often have a regular shape and cannot be broken up by any simple mechanical processes into other minerals. Compound minerals, such as coal, iron ore, slate, granite, etc., are, on the other hand, mixtures of simple minerals; granite, for example, may be seen by the naked eye to consist of a mixture of simple minerals which can be separated by hand when the rock is crushed.

Rocks are usually composed of mixtures of simple minerals, by the identification of which their composition and history can be determined. The lithosphere must originally have consisted solely of primary rocks; the surface layer was decomposed by air and water and the fragments used as the constituents of a new generation of rocks. Because in them the material is used for a second time they are called *secondary rocks*. As they consist of broken fragments they are *clastic*; the fragments are large, such as pebbles in a conglomerate, of coarse grains in a sandstone, and of particles so minute that they cannot be seen by the naked eye in a clay or shale.

Sedimentary Rocks

As these fragments are deposited as sediment, the rocks they form are called *sedimentary*; as these rocks are deposited in layers, each of which is a stratum, the second-

ary rocks are stratified. Most of them having been laid down by water, as on the sea floor or on the bed or banks of rivers, they are therefore called *aqueous rocks*. During their deposition remains of animals and plants are embedded in them and preserved as fossils. Secondary rocks, then, are *clastic*, *sedimentary*, *stratified*, and often *fossiliferous*. Primary rocks, on the contrary, consist of original glassy or crystalline constituents; they are therefore not *clastic*, and they are *unstratified*, *igneous*, and *unfossiliferous*.

In addition to the stratified rocks made of sediments there are some composed of the shells, skeletons or hard tissues of various animals and plants. The most important representative of this group is *limestone*; it consists of carbonate of lime which has been extracted from water by corals, shell fish (mollusca), calcareous plants, etc. Some organisms secrete shells and skeletons of silica, and their remains form beds of *chert* or *flint*. Some plants extract iron from water and they deposit layers of iron ore. Some animals extract phosphoric acid and form shells and bones of phosphate of lime; they give rise to *phosphatic limestones*, which are of great value as a source of manures. Another group of stratified rocks is deposited chemically, generally as residues left by the evaporation of water; such are beds of rock salt and of various potash salts.

Metamorphic Rocks

Intermediate in character between the primary and secondary rocks is a third group which consists of rocks that have been altered by heat, or superheated steam, or the injection of veins of molten rock, or by intense pressure. These rocks often retain their arrangement in strata, but their constituents have been crystallised and any fossils that may have occurred in them have been destroyed. These rocks have been so thoroughly altered that they are known as *metamorphic*. They have been produced from both secondary and primary rocks. They have generally been formed at great depths below the surface, and have been exposed by uplift in mountain chains or by the removal of the rocks which once covered them. The peninsular part of India, most of Scandinavia and Finland, and the western part of Australia each consists essentially of a large exposed block of these once deep-seated metamorphic rocks, associated with igneous rocks which have been forced into them from a still deeper zone.

THE ARRANGEMENT OF STRATIFIED ROCKS, FOLDS, AND FAULTS. When beds are laid down in a regular succession, each sheet horizontally upon that below it, the series is said to be conformable. But if one series of beds has been tilted and new beds are deposited across its worn edges, the two series are unconformable. Unconformities are important because they indicate long intervals of time during which no beds were deposited; and there are some complete gaps in geological history when a universal unconformity marks a time of world-wide disturbance of the crust. The recognition of unconformities is also important in applied geology, for if their existence be overlooked serious errors may be made in mining or in searching for minerals or water.

The stratified rocks of the earth's crust were laid down in layers which were originally horizontal; the bedding may have been regular where the material was deposited or rearranged by strong currents. The beds, however, are generally tilted, and their slope is known as the dip. Rocks are also disturbed by folding. The rocks may be bent by upfolds in arches, which are known as anticlines; the beds may sag in downfolds into troughs or synclines. Such folds are often due to lateral pressure, as when a tablecloth is wrinkled into folds by being pushed across a table. When the lateral movement is considerable, folds may be so crowded together that the two sides of each fold may be parallel as in a closed concertina. Such compressed folds are known as isoclines. If the plane of the isocline, instead of being vertical leans over to one side, the beds on the under side are turned upside down, and the succession is said to be reversed. An upfold around a point forms a dome, and a downfold around a point forms a basin.

Faults and Sunklands

The disturbances of the crust often produce fractures on one side of which the beds may be displaced upward or downward. Such movements are known as faults. They break the continuity of beds, so that a sheet of stone may end abruptly at a fault, beyond which it may lie above or below its original level. In mining it is therefore important to recognize faults, and to determine on which side the beds have been pushed upward (the upthrow side), and on which they have sunk (the downthrow side). Faults may occur singly or in series; several faults with the throw all in the same direction are known as step-faults.

A pair of parallel faults, between which the beds have moved downward, forms a trough fault. A pair of parallel faults between which the rocks have been left upraised form a ridge fault, and the block of country between them is a horst. A valley formed by the sinking of a strip of country between two parallel faults is a rift valley, while a large tract of country which has sunk within a ring of faults is a sunkland. The continents may be regarded as vast horsts which have been left upstanding owing to the subsidence of the ocean basins by combined faulting and folding; the oceans cover the largest of the sunklands, whose floors have foundered beneath the sea.

Submerged Continents

According to a once popular theory, the ocean basin and continental elevations have been in the main permanent throughout geological times. The balance of evidence, however, is against this view. Some portions of the continents have, it is true, remained above sea level throughout geological time, and it is correspondingly probable that parts of the ocean basins may have been permanently below sea level. Nevertheless, there has been great interchange of ocean and continent. There is evidence, for example, of a great continent, known as *Gonwanaland*, which once extended from Australia westward across the Indian Ocean, included most of India and Africa, continued across the Atlantic, and comprised the eastern highlands of South America.

EARTH MOVEMENTS AND MOUNTAINS. The movements in the crust which cause faults sometimes tend to pull the rocks asunder as if the crust were shrinking, while at others the rocks are pressed together. Faults of the former class are nearly world-wide in distribution, whereas those due to compression on a great scale at any one time in the earth's history have been restricted to particular belts along which the rocks have been crumpled into mountain chains.

Some of the continental highlands may be regarded as vast horsts which have been left upstanding while the surrounding countries have been lowered by folds and faults. Such horsts form the peninsula of India, the plateau of Western Australia, the highlands of Brazil and tropical Africa. In contrast to these broad highlands are the long and comparatively narrow chains of fold-mountains, which are due to the folding of

strips of the earth's crust along lines of special compression. Such fold-mountain systems are represented by the Andes in S. America, the Alps, and the Himalayas.

These fold-mountain chains have been produced at successive periods of active disturbance of the earth's crust. Three periods of the formation of fold-mountains have been of special importance: that which has left the greatest mark on the existing topography of the earth produced in Europe, in comparatively late geological times (oligocene and miocene), the Alpine system which includes the Alps, Pyrenees, Apennines, and the main chain across the Balkan Peninsula.

As to the ultimate cause of such earth-movements there is no full agreement. The most obvious cause is the adaptation of the crust to the shrinkage of the interior. The fold-mountain chains are analogous to the wrinkles formed on the skin of an apple by the shrivelling of the pulp; and with additions to explain the restriction of the folding to special belts this explanation is probably the most satisfactory. The great subsidences between the folded belts are probably due to the shrinkage of the interior, leaving areas unsupported.

Movements of the Earth's Crust

The upward and downward movements of the crust have determined the main configuration of the earth, but many secondary geographic features are also due to the heaving of the earth's surface. The crust is in a state of continual tremor and movement; large parts of the earth's surface are in such delicate equilibrium that the weight of a fresh layer of sediment, or of extra water at high tide, or even a heavy storm of rain, may press down the loaded area. Similarly the removal of a layer of material from a land may not permanently lower the surface, as the land may rise owing to the lightening of its load. This ready yielding by the surface to slight variations in weight may appear inconsistent with the existence of mountain chains and the ocean basins. It might be thought that mountains, by pressing down their foundations, would sink to the average level, while the ocean floors would rise to it. The existence of mountains is explained by the weight of their raised masses being compensated by a deficiency of material in their foundations. This principle is known as *isostasy*.

According to it all blocks of the crust which are equal in area, and extend down to a surface about 70 m. below sea level, are equal in

weight. Thus a block 74 m. thick below a place in the Himalayas that is 4 m. above sea level weighs the same as a block equal in area and 66 m. thick below the ocean floor where it is 4 m. below sea level. The greater thickness of the Himalayan block would be compensated by the greater density of material in the sub-oceanic block.

DYNAMIC GEOLOGY—DENUDATION, VOLCANOES, AND EARTHQUAKES. The surface of the lithosphere is constantly crumbling under the attack of wind, air, and water. The gases of the atmosphere cause the decay and disintegration of rocks. Wind, rain, and rivers carry away the decomposed material and expose fresh layers to decay. This process is known as denudation, and it is steadily lowering the surface of the land. The materials derived from the wearing away of the land are in time carried to the sea, and there deposited as beds of sand or clay which are formed into new secondary rocks.

The Work of Ice

Denudation in cold countries and on snow-clad mountains is aided by the work of ice; glaciers flow from the mountain snowfields down the valleys, and carry with them stones and earth which are deposited when the glacier melts in ridges known as moraines. The geological work of ice is at present restricted mainly to mountains and to low levels in the Polar regions; but in former times large tracts of country which are now ice free were once covered by glaciers. The British Isles, for example, were in comparatively recent geological times covered by a sea of ice, which was formed upon the mountains of Scotland, the N. of England, and Wales; it flooded all the northern part of the country, and deposited wide sheets of boulder clay. The remains of various older glaciations have been found even in tropical regions. One of the most famous is known from isolated glacial deposits in India, Australia, S. Africa, and S. America, which were formed by extensive glaciers at the time when the growth of luxuriant vegetation in Europe and the U.S.A. was producing the materials for their chief deposits of coal.

A second group of dynamic processes depends on subterranean actions, of which the most striking are those connected with volcanoes and earthquakes. A volcano is a pipe up which molten rock is forced to the surface by its included gases or steam, or by pressure due to earth movements. An earthquake is a sudden violent move-

ment of the ground; it may be due to a volcanic explosion, which may be so powerful as to shake the whole earth, or it may be due to the slipping of a mass of sediment down a steep slope especially beneath the sea, or it may be due to the uplift or subsidence of part of the earth's crust by faulting or folding. From the locality where the initial movement takes place a shock passes outward in all directions, and is felt as an earthquake.

HISTORICAL GEOLOGY. Historical geology depends on two main principles. The first is that of superposition. As the secondary rocks of the crust are laid down in layers, one on top of the other, it follows that the lowest rock in a series is the oldest and the uppermost is the youngest. Superposition is therefore alone usually a safe guide to the relative ages of adjacent rocks. It cannot, however, be implicitly trusted, since series of tilted rocks are inverted by earth movements, hence a rock may lie upon one that was originally above it. Superposition is also inapplicable to the comparison of rocks in distant parts of the world. The final determination of the age of rocks depends on the second method—the use of fossils. Fossils are the remains or impressions in a rock of animals or plants that lived during its formation. The early animals and plants were primitive in character, and, in accordance with the theory of evolution, there has been a gradual change from them to the more complex organisms of later times. Fossils, therefore, can be used like medals or coins to determine the dates of ancient ruins.

Geological Periods

The discovery by William Smith (1769–1839) that fossils could be used in this way gave him his title of Father of Geology. He showed that fossils are “the medals of creation,” for each geological period was characterised by particular types of life. For example, the graptolites lived in the world during the three older subdivisions of the Palaeozoic period. Any rock containing a graptolite, in whatever part of the earth it may be found, may be safely identified as Lower Palaeozoic. The main time scale used in geology is based upon the succession of life. Sir Charles Lyell termed the group of rocks containing the oldest known fossils the Palaeozoic or period of ancient life. It was succeeded by the Mesozoic or period of middle life, and that in turn by the Kainozoic or period of recent life. Before the Palaeozoic

there are two great groups of rock in which no definite fossils have been found. The older of these two groups is the Eozoic, its rocks are igneous or metamorphic, and unfossiliferous. It was succeeded by the Archaeozoic, a period mainly composed of unaltered secondary rocks which are earlier than the Palaeozoic, and contain some obscure fossil remains. The Palaeozoic, Mesozoic and Kainozoic have been also called the Primary, Secondary, and Tertiary respectively. Of these terms the two former have been abandoned, but the term Tertiary is still often used for Kainozoic.

Palaeozoic Fossils

The pre-Palaeozoic rocks contain only obscure or indirect traces of life, which probably originated by the formation and modification of carbohydrates under the special atmospheric and climatic conditions which must have existed at one stage of the early earth. The first organisms must have been small, and would have had no hard parts which could leave traces in the rocks. Fossils begin suddenly in great variety and abundance with the Palaeozoic, their abrupt beginning indicates that at one period many groups of soft-bodied creatures simultaneously developed shells, and could thus be preserved as fossils. This rapid spread of shell formation may have been either as a protection against a group of animals which had become carnivorous, or owing to some change in the quality of sea water by which shells were rendered possible.

From the beginning of the Palaeozoic age fossils have been plentiful; in the lower Palaeozoic systems there were no back-boned animals, of which the fish occur as early as the Silurian. Reptiles appeared in the upper Palaeozoic, when the rank vegetation of the Carboniferous and Permian produced the world's chief deposits of coal. The Mesozoic period, especially represented in England by the oolitic limestone and the chalk, was the age of reptiles; but during it birds and mammals both made their first appearance. Mammals became supreme in the Kainozoic, the end of which was marked by the advent of man. The date of the oldest vestige of man is the subject of active research and controversy. The crags of East Anglia (Upper Pliocene in age) have yielded many chipped flints which are regarded by some authorities as wrought by man; if so, they are the oldest of human implements. The most primitive

known fossil man is the Eoanthropus, found at Piltdown in Sussex.

The interpretation of historical geology requires very prolonged periods of time. Various estimates based upon the rate of cooling and on tidal action have suggested the conclusion that geological time might be limited to 100 million years or perhaps even to 20 million years. But many geologists regard such estimates as quite inadequate, and prefer the conclusions more recently advanced by radio-activity, that the age of the earth must be very great, from 1,000,000,000 to 2,000,000,000 years being a reasonable estimate. See Escarpment; Fault.

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Geometer Moth. Group of moths whose caterpillars are often called loopers from their curious mode of progression. They have only two pairs of prolegs, placed close to the rear of the body, and walk by alternately drawing up the body into a loop and then extending it again. Many of these caterpillars when at rest look exactly like dry twigs. See Caterpillar.



Geometer Moth.
Caterpillar of Brindled
Beauty Moth

Geometric Mean. Term used to denote the middle or average value of two quantities considered from the point of view of a steady rate of change from one to the other. Thus the geometric mean of 2 and 18 is 6, for 6 is 3 times 2 and 18 is 3 times 6, the rate of change being expressed as threefold multiplication. Expressed algebraically the geometric mean of a and b is \sqrt{ab} . The geometric mean is more correctly used than the arithmetical average in many investigations, e.g. the mean of population at ten-yearly intervals.

Geometrical Progression. Series in which the ratio, or multiplying factor, between the successive terms is constant. Thus in the series 1, 3, 9, 27, 81 the constant ratio between successive terms is 3, each quantity being three times the preceding one. Algebraically the series is $A + Ax + Ax^2 + Ax^3$, etc., or $A(1 + x + x^2 + x^3 \dots)$.

GEOMETRY: FROM EUCLID TO EINSTEIN

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Here is given a brief historical outline of one of the oldest of sciences. Further information will be found under the headings Conic Sections; Coordinates; Fourth Dimension; Mensuration, etc. See also Descartes; Einstein; Euclid

Geometry is the science of spatial relations. According to the ancient belief, geometry originated in the art of land-surveying, as practised in Egypt, and this tradition is preserved in the Greek name ($\gamma\eta$ =the earth, $\mu\epsilon\rho\epsilon\upsilon\iota\nu$ =to measure.) The Egyptians were certainly acquainted, before the year 1000 B.C., with some rules of mensuration, and they made practical use of the fact that if the sides of a triangle are respectively 3, 4, and 5 units, its greatest angle is a right angle.

But it was in Greek hands that geometry became a logical science, with general theorems. The most popular text-book ever written on any science was Euclid's Elements, which was designed for the use of students of mathematics at the University of Alexandria about 300 B.C., and has been used as a text-book of geometry in our schools down to the present day. Euclid begins with certain definitions, axioms and postulates, from which he professes to deduce all his results by purely logical processes, without further appeal to the eye or to common-sense. Thus he thinks it necessary to prove that two sides of a triangle are together greater than the third, an example which illustrates the abstract philosophical outlook of the Greek geometers. Though modern scrutiny has detected some flaws in Euclid's logic, and many of his methods have been abandoned as cumbersome, his deep insight into some of the most difficult problems of geometry is undoubted, and has been attested by some of the best modern writers.

Euclidean Theorems

Euclid's propositions are of two kinds, theorems and problems; a theorem establishes a geometrical property by deduction from previous results; a problem is a method of making a geometrical construction, followed by a theoretical proof that the method leads to the result desired. Beginning with propositions concerning simple figures bounded by straight lines, such as triangles, squares, rectangles, and parallelograms, Euclid passes to the geometry of the circle and of regular polygons with more than four sides. After a preliminary study of ratio and proportion, the properties of similar figures (of like shape but of different dimensions) are discussed, similar triangles being the leading case.

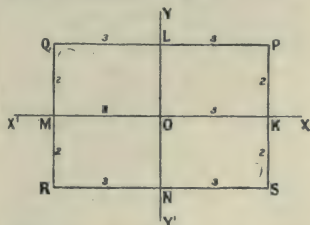
This work occupies the first six books of the Elements, which are devoted to the geometry of figures in one plane (plane geometry); four books follow on arithmetic, and then the eleventh, twelfth, and thirteenth books consider the geometry of figures in three-dimensional space, and of solid bodies (solid geometry). The only curved line discussed by Euclid was the circle, but the Greeks also studied in great detail the geometry of the conic sections, which include three types of curves, the parabola, ellipse, and hyperbola. These curves are the intersections of the ordinary (right circular) cone by different planes; they may be illustrated by the shadows of the circular base of a candlestick cast on the floor and walls of a room by the candle, held in different positions.

Applied Geometry

The classical geometry of the Greeks was not, strictly speaking, numerical, though it involved ratio and proportion, but their astronomy, which they developed to a considerable degree of accuracy, demanded a method of measuring angles. The division of the right angle into 90 equal parts, called degrees, and of the degree into 60 minutes, they derived from the Babylonians; the measurement of certain lengths connected with an angle of given size was a natural step forward, and this led to the science of trigonometry. These lengths, or, as they may be more accurately described, ratios of lengths, have received the name of trigonometrical ratios or functions (sine, cosine, etc.), and plane trigonometry deals with their application to the measurement of triangles.

This science is applied to the surveying and mapping of small areas of the earth's surface; when the areas are so large that the spherical shape of the earth must be considered, spherical trigonometry is required. This is the study of triangles on a sphere, bounded by arcs of great circles—that is, such circles as divide the surface of the sphere into two equal parts—and is essential to astronomy and navigation. Astronomy in later times utilised the properties of the conic sections, for Kepler in A.D. 1609 found that the planets moved round the sun in ellipses, and the known properties of the ellipse led Newton to the discovery of the law of gravitation.

A great advance in geometry was made in 1637 by René Descartes, who introduced the method of co-ordinates, which lies at the base of analytical geometry. The idea of co-ordinates is simplicity itself; it is that the position of any point in a plane may be represented by its perpendicular distances from two fixed perpendicular lines. For ex-



ample, in the figure, $X'OX$ and $Y'OY$ are the fixed axes, PL is equal to 3 units, and PK to 2 units, and P is represented by its co-ordinates (3, 2). To distinguish P from Q , R , S , which are at the same distances from the axes as P , negative co-ordinates are used. Thus Q is the point $(-3, 2)$, R is $(-3, -2)$, S is $(3, -2)$. In general, the perpendicular distance of a point from OY is denoted by the letter x , and the distance from OX by the letter y , and the point is called (x, y) .

Value of Co-ordinates

This simple notation had far-reaching effects in geometry, and has enabled geometrical concepts to be applied with great advantage to other branches of mathematics, such as the differential and integral calculus, mechanics and electricity. Its utility depends on the fact that a curve may be regarded as an assemblage of points possessing a certain common property; e.g. a circle is an assemblage of points all at the same distance from the fixed centre; when considered in this way a curve is called a "locus."

This common property may be expressed in the form of an algebraical equation connecting the x and the y of any and every point on the locus, and the curve is then completely represented by this equation, which implicitly contains every possible property of the curve. Thus the conic sections can all be represented by an equation of the form

$ax^2 + 2hxy + by^2 + 2gx + 2fy + c = 0$, which for different numerical values of the constants a, h, b, g, f, c may denote a circle, a parabola, an ellipse, or a hyperbola; and the properties of these curves can all be deduced from this equation. By the discovery of analytical geometry the scope and generality of geometrical methods was immensely increased, and an even greater

degree of success attended the application of the method of co-ordinates to three-dimensional geometry. In analytical solid geometry three coordinate planes (such as the floor and two adjacent walls of a room) take the place of the coordinate axes, and the position of a point is represented by three co-ordinates (x, y, z) . An equation between x, y , and z then denotes a surface.

Practically all advances in solid geometry have been due to analytical methods, on account of the impossibility or difficulty of representing solids in a plane. For this reason little advance in solid geometry was made by the ancients.

Line geometry is the name given to that system of geometry in which straight lines replace points and systems of straight lines systems of points. H. Grassman (1844) and Cayley (1859) and J. Plücker were the three chief exponents of the system, which in new hands and those of modern geometers has added greatly to the knowledge of the properties of surfaces and solids.

Another great advance which may be compared in generalising power to that made by Descartes, though its effects have not been so far-reaching, was the introduction of projective geometry, the foundations of which were laid about the same time by Desargues. The germ of projective geometry is already implicitly contained in the idea of the sections of a cone, which may be circles, ellipses, parabolas, or hyperbolas. Straight lines drawn from the vertex of the cone to meet the circular base, itself a section of the cone, will also meet any other section of the cone, an ellipse, for example, and two such curves as this circle and this ellipse may be called projective.

Orthogonal Projection

Certain properties are common to curves which are projective, and by utilising these properties a connexion is obtained between theorems which are true for the different kinds of conic sections. In particular, properties of the other conic sections can be inferred from known properties of the circle. Another kind of projection of great usefulness is orthogonal projection, in which a curve is projected from one plane on to another by means of straight lines perpendicular to the second plane. For example, a section of an ordinary (right circular) cylinder by a plane not parallel to the base is an ellipse; the circular base may be considered as the orthogonal projection of the ellipse. This method is the basis of practical solid geometry, which enables

us to represent three-dimensional objects accurately on a plane.

The axioms and postulates on which Euclid based his system of geometry are accepted with slight modification as the foundation of trigonometry, analytical geometry, and projective geometry, and the successful applications of these sciences in practice bear witness to the substantial truth of these axioms. But geometry may be considered from a purely abstract standpoint, as a science in which certain theorems regarding points, lines, planes, etc., are logically deduced from certain premises, with no necessary connexion with the space of experience, and it has been possible to construct perfectly consistent theories on the basis of a denial of some of Euclid's assumptions.

Non-Euclidean Geometry

Many perfectly logical non-Euclidean systems of geometry have been evolved, the two chief of which are known as elliptic and hyperbolic geometries. These geometries are leading to new concepts of space.

For instance, the parallel postulate of Euclid amounts to the assertion that through a given point only one straight line can be drawn parallel to a given straight line; if we assume that two parallels or no parallel can be drawn we are led to different kinds of non-Euclidean geometry, each perfectly consistent with itself, though leading to conclusions apparently inconsistent with experience. But it is conceivable that space may be really non-Euclidean, although apparently Euclidean in such comparatively small parts as we are able to explore, just as a sheet of water appears plane, though we know it is really part of the curved surface of the earth. This possibility has recently received strong support from the researches of Einstein.

Among more recent developments of geometry we may mention the theory of vectors; a vector is essentially a straight line given in magnitude, direction in space, and direction along its length (a straight line with an arrow-head on it, in fact), but not fixed in position. This theory has had many interesting physical applications, and of late especially in connexion with four-dimensional space—a purely mathematical conception in which the passage from three to four dimensions is imagined as analogous to the passage from two dimensions to three. This conception seems sufficiently remote from experience, yet it has played an important part in the development of the recent physical theory of "relativity."

The theory of vectors received a great impetus at the hands of Sir W. Rowan Hamilton under the name of quaternions. *See* Conic Sections; Einstein; Fourth Dimension; Mathematics; Quaternions; Relativity; Trigonometry.

W. D. Evans

Bibliography. School Geometry, Hall and Stevens, 1906; Plane Geometry for Advanced Students, C. V. Durell, 1912; Coordinate Geometry of Three Dimensions, R. J. T. Bell, 1912; Modern Geometry, C. V. Durell, 1920.

Geomorphology. Science of the study of the crust of the earth's surface. Geology deals with the history of the formation of mountainous masses, elevations, depressions, etc., while geomorphology deals with their present configuration. *See* Geology.

Geophagy or **EARTH EATING.** Widely spread custom of eating various forms of earth, chiefly clay. Its purpose is dietetic, medicinal, or sacramental. In Caledonia, cakes of iron-manganese earth are eaten after copious meals; in New Guinea, soapstone is preferred. The Dyaks of Borneo eat a mixture of red ochre and an oily clay; the Hopi Indians of North America eat clay mixed with potatoes.

Geophilus (Gr. *gē*, earth; *philos*, loving). Genus of blind centipedes which live under ground, whence their name of earth-loving. They prey mainly upon worms, which they attack in their burrows and on the ground.

George, THE. Part of the insignia of the order of the Garter. It is an enamelled gold pendant, representing S. George slaying the dragon, and is suspended from the collar. There is a "lesser George" with the same device on an enamelled ground, surrounded by an oval garter. *See* Garter.

George. Name formerly applied in a familiar sense to British coins bearing the image of S. George, e.g. the crown and the guinea. The yellow George was a cant term for the latter.

George. Lake of Africa. It is in the S.W. of the Uganda protectorate, forming a N.E. extension of Lake Edward, with which it is connected by a narrow channel.

George. Salt lake of New South Wales. It is 25 m. S.W. of Goulburn, and is an isolated basin with no outlet. Sometimes nearly dry, it measures usually 25 m. by 8 m.

George. Lake of New York, U.S.A. Situated in the E. part of the state, between Washington, Essex, and Warren cos., it stretches N.E. to S.W. for 35 m., and has a breadth varying from 1 m. to 3 m. Picturesquely located among the foothills of the Adirondacks, it is a

shallow, clear water lake, studded with small islands, and is drained by a stream into Lake Champlain.

George (Gr. *georgos*, husband and man). Masculine Christian name. Although that of the patron saint of England, it did not become popular in that country until after George I came to the throne. The German form is Georg and the French Georges. Georgina and Georgiana are feminine forms.

George. Patron saint of England. He is generally identified with George of Cappadocia, who was put to death by Diocletian, April 23, 303. According to the Golden Legend, having slain the dragon, he put off his knightly habit, gave all he had to the poor and went forth to preach Christianity, and was martyred in 287.

S. George first became recognized as England's patron saint under the Norman kings. In 1346 Edward III founded the Order of the Garter with S. George as its badge, and some years later Edward IV built the present magnificent S. George's Chapel at Windsor, where, in the reign of Henry V, the supposed heart of the saint was deposited as a precious relic. S. George is also the patron saint of Portugal and of Aragon.

George I (1660-1727). King of Great Britain and Ireland. Born at Hanover, March 28, 1660, he was the son of Ernest Augustus, afterwards elector of Hanover, and was baptized as George Louis. His mother was Sophia, a grand-daughter of James I. In 1682 he married a cousin, Sophia Dorothea, but the union, partly owing to the prince's numerous infidelities, was unhappy, and in 1694 the princess was divorced. George served with his father's troops against the French, but much of his early life was



S. George, the patron saint of England. From a medal by W. Wyon, R.A., executed for the Prince Consort in 1851

given up to pleasures of the grosser kind. In 1698 he became elector of Hanover and in 1701 the Act of Settlement recognized his mother and then himself as heir to the throne of Great Britain. In 1707 he commanded an imperialist army in the war of the Spanish Succession, but resigned in 1710.

On Aug. 1, 1714, George became king, and he ruled Great Britain for thirteen years. Although neither popular nor instructed nor able, he had a certain common-sense, while his ignorance of English compelled him to leave much to his ministers. By accident or design, therefore, he may be described as a constitutional sovereign. As a European figure, however, he was of much importance, and in European politics was constantly active. The king died at Osnabrück, June 11, 1727, and was buried at Hanover. Of his mistresses the most prominent were the ladies created by him duchess of Kendal and countess of Darlington. *See* The First George in Hanover and England, L. Melville, 1908; George I and the Northern War, 1709-21, J. F. Chance, 1909.

George II (1683-1760). King of Great Britain and Ireland. The son of George I, he was born at Herrenhausen when his father was only electoral prince of Hanover, Nov. 10, 1683. His early life was passed in Hanover, where he was educated, and at the head of some Hanoverian troops he served against France in the war of the Spanish Succession. The Act of Settlement of 1701 placed him in the succession to the throne of Great Britain, and in 1706 he was made duke of Cambridge, but a proposal that he should reside in



George II
After Kneller

England fell through. At Hanover he lived until 1714 the somewhat coarse life of a prince who was without either ambition or culture. In 1714 the prince followed his father to England, and for thirteen years he was prince of Wales. The



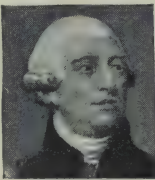
George III

After Zeeman

relations between the two had been bad for some time, and in London they reached such a state that the prince was ordered to leave the court. He replied by setting up a court of his own, which became the centre of all opposition to George I and his ministers.

In 1727 George became king, and he reigned for 33 years. The reign may be divided into two parts, the break being the resignation of Walpole in 1742. In both he acted as a constitutional sovereign, realizing that there was a new power in the state—the will of the people. His own quarrels with his father were repeated in the case of himself and his son Frederick, who, driven from court, formed his own circle of opposition to the king and the ministry. He had the sense to heed the wise advice of his wife Caroline, whose influence over him was considerable. He had several mistresses, both before and after his wife's death. In addition to Frederick, George had a son, William Augustus, duke of Cumberland, and five daughters. He died at Kensington Palace, Oct. 25, 1760. George was the founder of the university of Göttingen. *See* *Memoirs of the Reign of George II*, H. Walpole, 1847; *Memoirs of the Reign of George II*, Lord Hervey, 1884.

George III (1738–1820). King of Great Britain and Ireland. The eldest son of Frederick, prince of



George III

After Lawrence

Wales, he was born June 4, 1738, and was baptized as George William Frederick. His father died in 1751, and he was educated under the eyes of his mother, Augusta, a princess of Saxe-Coburg, and the earl of Bute, who became the head of his household when this was set up in 1756. Their aim was to make him a king of the older type, one who dominated domestic and for-

eign politics, rather than one of the constitutional type as was his grandfather, George II. In Oct., 1760, he became king.

George was the first ruler of his house who could claim to be a Briton born and bred. His reign began with an attempt to secure power for himself. The earl of Bute succeeded Pitt and Newcastle in 1761, but he left office in 1763, and it was evident that some other method or some other minister would have to be tried if the plan was to succeed. Other prime ministers, less pliable, followed, but by 1770 the king had formed his own party, the king's friends, and Lord North became premier. For twelve years George directed, through him, the affairs of the country, the period being marked by the independence of America. In 1780 the king's mind had given way, and a regency was necessary, but he soon recovered and was able to throw his influence into the prosecution of the war against France and to declare strongly against any concessions to the Roman Catholics. From time to time fresh attacks of insanity came on, and in 1811 he was finally incapacitated. He lingered, however, until Jan. 29, 1820, when he died at Windsor.

George was neither a wise nor a constitutional king, and a good deal of responsibility attaches to him for the misfortunes of the reign. His private life, on the other hand, was blameless, and in his later years his popularity was great, due in part to his homely ways, seen in his name of Farmer George. When a young man he had strongly wanted to marry Lady Sarah Lennox, but he was dissuaded, and in Charlotte, princess of Mecklenburg-Strelitz, he found a partner who made him happy. His family consisted of nine sons and six daughters. The sons who grew to manhood were George IV, William IV, and the dukes of York, Kent, Cumberland, Sussex and Cambridge. *See* *History of England*, W. E. H. Lecky, vols. III–VI, 1899–1901; *see also* *Caricature*.

George IV (1762–1830). King of Great Britain and Ireland. The eldest son of George III, he was born in London, Aug. 12, 1762 and was baptized as George Augustus Frederick. A few days afterwards he was created prince of Wales. With considerable abilities, he was carefully



George IV

After Lawrence

educated, but he early entered on a life of extravagance that continued to the end.

The prince of Wales became prominent politically owing to the insanity of his father. In 1788 the country was agitated over the question of the regency. Should the prince, as Fox contended, become regent by right of birth and receive the kingly power without limitations, or should the office be conferred upon him subject to certain restrictions laid down by Parliament? The latter view, that of Pitt, prevailed, but George was only their regent for a short time. In 1811, however, the king's insanity returned and he became regent again, retaining the position until his accession in Jan., 1820.

As ruler of the country between 1811 and 1830, George IV was neither successful nor popular. He resisted reform as long as he could, for he was old and feeble when he consented to the measures that granted relief to Nonconformists and Roman Catholics.

The chief interest of the reign, from the popular point of view, was in the relations between the king and his wife, Caroline of Brunswick, whom he married in 1795. The two soon separated, but their discords were the subject of public inquiry in 1806 and of great public excitement when he became king. A bill to deprive the queen of her royal position was introduced, but it failed to pass, public sympathy being vociferously on the side of the lady.

George had a succession of mistresses—Mary Robinson, the actress, Lady Jersey, Lady Hertford, Lady Conyngham, and others. His most lasting union was with Mrs. Fitzherbert, who secretly became his morganatic wife in 1785 and lived with him until 1813. His only legitimate child, the princess Charlotte, died in 1817, a year after her marriage with Leopold, prince of Saxe-Coburg. The king's admirers called him the first gentleman of Europe, and although "a bad son, a bad husband, a bad father, a bad subject, a bad monarch, and a bad friend," there is some slight justification for the title in the courtly way he behaved on state occasions, while in his younger days he was a handsome man. He was a great gambler and a drunkard, and one reason for his unpopularity was the fact that the nation had more than once to pay his debts. George died at Windsor, June 26, 1830. *See* *Greville Memoirs*, ed. H. Reeve, 1875; *Mrs. Fitzherbert and George IV*, W. H. Wilkins, 1905; *The First Gentleman of Europe*, L. Melville, 1906.

GEORGE V: KING AND EMPEROR

David Williamson, Author of *Our King and Queen*

This biography, like those of the other kings of Great Britain, is concerned mainly with the personal life of the King, leaving to other articles the political history of the reign. See therefore United Kingdom; and the articles on the politicians and other prominent personages of the time

King George V was born at Marlborough House, June 3, 1865. He was the second son of the prince of Wales, afterwards King Edward VII, and his wife Alexandra. He was christened with the names George Frederick Ernest Albert, and, with his elder brother Albert, received a thorough education under tutors, of whom the chief was Canon J. N. Dalton. Charles Kingsley interested him in natural history during visits to Sandringham, and some months in Switzerland enabled him to acquire a good knowledge of conversational French.

Prince George entered the navy on June 5, 1877, joining the *Britannia* at Dartmouth with his brother. They voyaged in the *Bacchante* to the W. Indies, and in 1880 went on a cruise round the world. Portions of their diaries of their travels were published in a volume edited by Canon Dalton. Prince George visited Canada, and saw Niagara and other notable spots; and studied at Lausanne. He then passed his examination for sub-lieutenant, obtaining a first-class in seamanship. In later years he received this eulogy from Admiral Hay, who said: "He is an accomplished naval officer, no carpet seaman, but one who has served like the rest of us." After a further course of training at the R.N. College, Greenwich, he qualified for the command of the gunboat *Thrush*, in which he visited the W. Indies again, where he opened an industrial exhibition in Jamaica.

The sudden death of his elder brother, Albert Victor, in 1892, made him heir, after his father, to the throne and curtailed his naval career. He was created duke of York and took his seat in the House of Lords, June 17, 1892. On July 6, 1893, he married Victoria Mary, only daughter of the duke and duchess of Teck, in the Chapel Royal, St. James's. The honeymoon was spent at Sandringham, where York Cottage became the favourite residence of the duke and duchess. He held a *levée* on behalf of Queen Victoria, March 13, 1894, and undertook many public duties. His son and heir, Edward, was born June 23, 1894, at White Lodge, Richmond, his other children being Albert, born Dec. 14, 1895; Mary, born April 25, 1897; Henry, born March 31, 1900;

George, born Dec. 20, 1902; and John, born July 12, 1905, who died Jan. 18, 1919.

The duke paid several visits to provincial centres, including Lancaster, where previously, he remarked, a duke of York would never have thought of bringing his wife! He relieved the prince of Wales of several public engagements, and, with the duchess, did good service by a tactful visit to Ireland, arousing, in the words of *The Times* correspondent, "a pitch of national enthusiasm which cannot be surpassed." In May, 1898, he acted as one of the pall-bearers at W. E. Gladstone's funeral.

The death of Queen Victoria, Jan. 22, 1901, and his father's accession to the throne increased his responsibilities. As duke of Cornwall and York, he fulfilled the previously planned tour of the British dominions, leaving England with the duchess on the *Ophir*, March 16, 1901. He opened the first parliament of the Australian Commonwealth; visited New Zealand, meeting the chiefs of Maori tribes; and was welcomed warmly at the Cape and in Canada. On Nov. 1, 1901, the voyage ended at Portsmouth.

On King Edward's birthday in 1901 the duke was created prince of Wales, and on Dec. 5 he delivered a notable speech in the London Guildhall, urging an increased alertness on the country's part in order to meet competition. The dramatic postponement of King Edward's coronation in 1902 gave much anxiety to the prince of



From the State portrait by Sir Luke Fildes. By permission of Thos. Agnew & Sons, owners of the copyright

George R. V.



George V. Portraits of His Majesty at different periods of his life. 1. Aged 3 years. 2. As a midshipman, 1880. 3. As naval captain, 1896. 4. As vice-admiral in full dress, 1901. 5. As field-marshal, 1912. 6. In 1920.

1 & 5, Downey. 2, 3 & 6, Russell. 4, H. Walter Barnett

Wales, but the king's recovery and subsequent coronation relieved the national tension. The prince took over many duties, especially those relating to London functions, and gained facility as a speaker. In 1905 he and the princess visited India and were present at a picturesque Durbar, returning home by May 7, 1906. Two years later they made an extensive tour through Canada.

Accession to the Throne

King Edward died after a very brief illness, May 6, 1910, and the prince ascended the throne as George V. The strain of the next few weeks, including the funeral of King Edward VII and the reception of many distinguished mourners, was followed by a holiday at Balmoral. The coronation of King George and Queen Mary in Westminster Abbey took place on June 22, 1911, when the king wore the coronation robes of George IV. In

the next three years the king and queen were busily engaged in visiting the various cities of the empire. The political situation, especially in Ireland, gave anxiety in the early part of 1914, and the king specially summoned a conference of the opposing party leaders at Buckingham Palace in July, in the hope of finding a solution of the deadlock. The outbreak of the Great War in Aug. overshadowed all other perplexities.

The king went to France on three or four occasions to encourage his army, and also visited the grand fleet. He and the queen set a practical example of economy in the conduct of their homes. In 1917, by royal decree, the name of the royal house was changed from Guelph to Windsor. The king and queen were indefatigable in visiting the sick and wounded, and in their philanthropic and other efforts. The signing of the ar-

mistice Nov. 11, 1918, led to a remarkable demonstration of loyalty.

Peace and War

King George has the directness of a sailor in his public and private speech; his wide travels and his excellent memory enable him to grasp problems with alertness and insight. Fond of open-air life and an exceptionally good shot, he would be happy in the occupations of a country gentleman. The years of war relegated many court formalities into the background, and enabled him to play the part of a leader of the nation. At innumerable investitures he impressed sailors and soldiers with his knowledge of their dangers and achievements, while his exertions in every direction, together with his close attention to affairs of state, are unrivalled in the history of kingship. See Abergeldie; Accolade; Coronation.

George (1819-78). King of Hanover. Born in Berlin, where his father was then residing, May

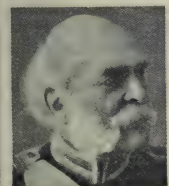


George V, King of Hanover

27, 1819, he was the only son of Ernest Augustus, who became king of Hanover in 1837. In 1833 he became blind, but this was not considered a bar to his accession in 1851 as George V. For 15 years his illiberal ideas involved him in constant quarrels with his subjects, leading to his expulsion in 1866. A supporter of Austria, he refused, contrary to the wishes of his Landtag, to remain neutral during the Austro-Prussian War, 1866, when the Prussians invaded and annexed Hanover.

George found a refuge in Austria, where he worked hard but vainly to recover his lost land. He died in Paris, June 12, 1878, and was buried at Windsor. He is known as George V, his four predecessors being also kings of Great Britain. He refused to the last to bargain about his rights to Hanover. His wife was Marie, daughter of Joseph, duke of Saxe-Altenburg, and his only son was Ernest, duke of Cumberland.

George (1832-1904). King of Saxony. Born at Dresden, Aug. 8, 1832, he was the youngest son of



George, King of Saxony

King John (1801-73). He was gazetted into the artillery in 1846 and commanded a cavalry brigade in the Austro-Prussian War of 1866. The Franco-Prussian War gave him greater opportunity for showing his military ability, and at the head of the Saxon army he won considerable distinction. In 1888 William I made him a Prussian field-marshal. On the death of his brother Albert, in 1902, he succeeded to the throne, and, after an uneventful reign, died Oct. 15, 1904.

George (1845-1913). King of the Hellenes. Born at Copenhagen, Dec. 24, 1845, he was a younger son of Christian IX of Denmark, and a brother of Queen Alexandra. In 1862 the Greeks were looking for a king to replace the expelled Otto. The crown was declined by several princes and then, by request, the British government nominated the prince of Denmark, Christian



George, King of the Hellenes

successful. In difficult circumstances he did all he could for the welfare of his country; but towards the end of his life it was drawn into the Balkan War, while previously it had carried on a struggle with Turkey. On March 18, 1913, in the midst of the Balkan struggle, the king was murdered by a subject while visiting Salonica. His wife was Olga, a Russian grand duchess. Of their children, Constantine succeeded to the throne; other sons were George, Nicholas, Andrew, and Christopher.

George (b. 1902). British prince. The fourth son of George V and Queen Mary, he was born at York Cottage, Sandringham, Dec. 20, 1902, and was christened George Edward Alexander Edmund. He

William His selection was approved by the Greeks, and he took the name of George, resigning at the same time his rights to the crown of Denmark. His long reign, which began in 1863, was on the whole suc-

entered the R.N. College, Osborne, in 1916, proceeding later to Dartmouth. In 1920 on the Temeraire he voyaged to the West Indies, and he joined the Iron Duke in Jan., 1921.



George Pinham

George (b. 1869). Greek prince. The second son of George, king of the Hellenes, he was born at Corfu,



George, Greek prince

June 24, 1869. He entered the navy and held various commands, but became generally known in 1898 when he was chosen by the Powers to act as high commissioner in Crete. He remained there until 1906, governing the island successfully. During the Great War George, unlike his brother, King Constantine, was classed among the partisans of the Allies. In 1907 the prince married Marie, a member of the family of Bonaparte.

DAVID LLOYD GEORGE: STATESMAN

Hamilton Pyfe, Special Correspondent of The Daily Mail

This career is here traced on the personal side. For the various activities of Lloyd George's public life reference should be made to the articles War, Great; Home Rule; Versailles, Treaty of, etc. See also biographies of Asquith; Balfour and other contemporaries

David Lloyd George was born Jan. 17, 1863, at 5, New York Place, Chorlton-on-Medlock, Manchester, where his father, William George, taught in an elementary school. His mother was, before her marriage, Elizabeth Lloyd, both parents being of Welsh extraction. Soon after his birth the family removed to a farm in S. Wales, where the father hoped to recover his lost health. He died, however, and his two boys were brought up by an uncle, a village shoemaker, at Llanystumdw, N. Wales. The uncle, Richard Lloyd, a man of strong character as well as strong opinions, took special pains to supplement the schooling which David got in the village, and spent his money in making him a solicitor.

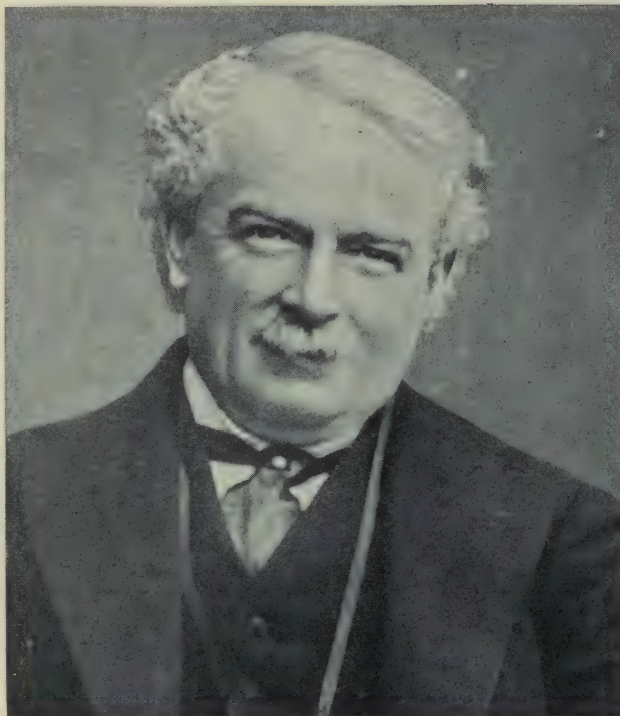
At Portmadoc, where he served his articles to a solicitor, from 1879, the young man quickly became known as a speaker at the debating society, and when he began practice for himself, having passed the law final in 1884, his shrewd grasp of difficulties, his combativeness and resolution soon brought clients

to his door. He made a name which was known throughout all the countryside, and was beginning to make money when a chance came to him to win a national reputation.

A Church of England clergyman refused to allow a Nonconformist to be buried in the churchyard beside his daughter. The young solicitor was consulted, and gave the opinion that the clergyman was acting beyond his rights. He further advised that the churchyard be entered "by force, if necessary," and the body buried as the old man wished. This was done, and when legal action was taken, Lloyd George was engaged for the defence. A county court judge decided against him. He took the case to the high court; before the lord chief justice in London, the decision was reversed.

Election to Parliament

On the wave of this triumph, Lloyd George was chosen to stand as Radical candidate for Carnarvon Boroughs against a local squire, Ellis Nanney. A by-election came,



Lloyd George

Vandyk

and in April, 1890, the young solicitor of 27 took his seat in the House of Commons. He did not make any immediate mark, though he spoke frequently; indeed, his opportunity to show what a fighter he was did not come until 1895, when a Conservative government replaced a Liberal one. He had, in pressing for Welsh Disestablishment, shown pertinacity and pluck, even venturing to stand up to Gladstone; but it was only when he found himself in opposition to the Conservatives, and especially to Joseph Chamberlain, that his fighting qualities developed.

Thinking that the Boers of the Transvaal and Orange Free State were being unjustly treated, Lloyd George pleaded their cause during the South African War. By this time Chamberlain had been forced to regard him as a dangerous opponent, one who dared everything, as, for example, when he tried to address an anti-war meeting in Birmingham itself. The meeting was broken up, the hall wrecked, and Lloyd George was compelled to leave the building in

a police constable's uniform. He continued all the same to declare the war unjustified, and in the end his courage increased public respect for him. There was no outcry against Lloyd George's appointment to be president of the board of trade, in Dec., 1905, when Sir H. Campbell-Bannerman formed his Liberal ministry. In that office he showed good qualities as an administrator, threw over the ministerial tradition of aloofness and superiority, and won golden opinions by his accessibility.

Lloyd George handled the great railway dispute of 1907, and the trouble in the cotton industry the same year, with distinct success. He had few temptations now to make attacks, though he once and again turned his power of invective against the tariff reformers. He seemed to be settling down into a front bench politician of the usual type, until a fresh phase of his career was opened by his being made, on April 12, 1908, chancellor of the exchequer.

He had now the opportunity to effect some of the changes which

he had advocated so often in the direction of greater social justice, and in his 1909 Budget he laid before the House a number of proposals for raising money. These included taxation of land values, taxation of coal royalties, fresh imposts upon land and alcohol, and super-taxation of large incomes, and were attacked with furious vehemence by the land-owning class and their representatives in both Houses of Parliament. There was also a great deal of general middle-class feeling against them as disturbing. Lloyd George answered this by pleading the cause of the poor, and holding up those who complained to ridicule. A violent speech at Limehouse, in which he assailed his opponents with particularly irritating effect, gave rise to the expression "Limehousing," descriptive of his style of oratory. In the country, as a whole, the Budget was popular, and the fight its author made for it increased his power.

When the House of Lords refused to pass the measures connected with the new taxes, they were accused, according to plan, of interfering with a money bill, and the Government successfully appealed to the country against what he called "that sinister assembly." The Liberals were returned to power, and the scheme for depriving the House of Lords of its right to veto legislation was carried into effect in 1911. His next piece of legislation was the National Insurance Act, modelled on the German plan. In spite of its promise of "9d. for 4d.," this never appealed strongly to the mass of people. He forced it through, however, in the face of determined opposition.

Then came the Great War. Deep as was his hatred of violence between nations, he showed at once that he could see nothing for it but to fight until the Germans had been taught that powerful empires have no right to crush small nationalities. At once he set himself, with the help of the leading financial and business brains, to devise means of providing the money required. Early in 1915 he left this to Reginald McKenna, and turned his immense energy to the task of supplying the army with munitions. Here and at the War Office, whither he went in July, 1916, he did most valuable service, and it was by his speeches also that the nation and its Allies were more heartened and encouraged than by those of any other public man. There was no surprise, therefore, when at the end of 1916 he was called to take Asquith's place as prime minister.

Dissatisfaction with the Asquith regime had culminated after the disastrous result of Rumania's entry into the war. More energy, closer coordination of effort, wider visions were, it was generally felt, essential for winning the war. Asquith's friends accused Lloyd George of intriguing against his chief; the affair had an underhand look, and the few days in which it was brought to a head were filled with mysterious manoeuvres. The effect of the change was useful in giving the world an impression that the war was being more vigorously prosecuted, and the belief in Lloyd George at home was proved by the great majority which returned him and his coalition ministry to office just after Germany's submission in 1918.

The Peace Conference

Lloyd George now became one of the arbiters of Europe's destiny at the Peace Conference, where, without following any decided line of his own, he exercised a moderating influence. On the signing of peace, 1919, he received the Order of Merit, and in 1920-22 was the leading figure in the Allies' conferences. He resigned the premiership, Oct. 19, 1922, visited U.S.A. and Canada, 1923, and merged his party, known as National Liberals, with Mr. Asquith's followers in Nov., 1923, when Mr. Baldwin's protectionist policy drew together all shades of liberalism in defence of Free Trade. After his retirement he wrote for the press.

As a speaker, Lloyd George was delightful. A pleasant voice, an easy manner, skill in gesture and in tone would in any case have made him an orator out of the common. To these he added a Celtic fervour, a Biblical diction, an imaginative quality that lifted his themes out of the political rut, and gave them that touch of "uplift," that relation with the deeper yearnings and the idealism of mankind which scarcely ever fails to move an audience. Those who have been charmed by his social gifts of urbanity and humour, his frank admission that there must always be two sides to a case, his readiness to discuss everything quietly and reasonably, were astonished to hear or to read his denunciations on the platform of those who differed from him, his outbursts of fiery zeal, and his solemn prophecies. As soon as he began to speak, he seemed to be a changed man; he was carried away by his own power of speech; he was, as it were, inspired; moreover, he reflected in his speeches to an unusually large degree the temper of the particular audience which he was addressing.

In 1888 Lloyd George married Margaret, daughter of Richard Owen, of Crickieth, which place he made his home when in Wales. Their family consisted of two sons and three daughters, but one daughter died in 1907.

Bibliography. Life of Lloyd George, J. H. Edwards, 1913-18; Life of Lloyd George, H. du Parcq, 1912-13; David Lloyd George, Harold Spender, 1919; Mr. Lloyd George and the War, W. F. Roch, 1920.

George, SIR ERNEST (1839-1922). British architect. Born in London, June 13, 1839, he was educated at Brighton, Reading, and the Royal Academy. He received the queen's gold medal of the Royal Institute of British Architects in 1896. President of the Institute 1908-9, he was elected an A.R.A. in 1910, and knighted in 1911. He was elected an R.A. in April, 1917. Examples of his work are to be seen in the Royal Exchange buildings, the Golders Green crematorium, the Royal Academy of Music, the Shirpur Palace, India, and in numerous London and country residences, including the restoration of Berkeley Castle. He died Dec. 8, 1922. See portrait, p. xxi.

George, HENRY (1839-97). American economist. Born at Philadelphia, Sept. 2, 1839, he became a printer in California. From that he became a journalist, and while gaining journalistic experience he began to study economic questions, and in 1871 he made himself known by his book, *Our Land Policy*. In 1879 this appeared as *Progress and Poverty*, and became enormously popular in Europe as well as in America, his proposed solution of the land question finding many supporters. George became the apostle of land nationalisation, which he proposed to bring about by means of the single tax. In 1886 he was a candidate for the mayoralty of New York, and he died Oct. 29, 1897. He also wrote *Protection and Free Trade*, 1886; *The Condition of Labour*, 1891; and *Principles of Political Economy*, 1898. See *Single Tax*; consult also *Life*, by his son, Henry George, 1900.

George, WALTER JORDALL (b. 1858). British athlete. Born at Colne, Sept. 9, 1858, his first running event was the mile, at the Notts Football Sports in 1877. He won the Spartan novices' steeple-

chase of $5\frac{1}{4}$ m. at Edmonton in 1878. In 1879 he won the mile and the four-miles in the amateur



W. J. George,
British athlete

championships at Stamford Bridge, and also the $10\frac{1}{2}$ m. Midland cross-country championship. In the U.S.A. in 1881, George met the American, L. E. Myers, winning in the three-quarters and the mile. During 1882 he carried off the half, one mile, four, and ten miles at the championship meeting at Stoke-on-Trent, the Midland and national cross country championships, and several challenge cups and prizes. In 1884 he won the half, mile, four miles, and two miles steeplechase in one afternoon, and the same year created new records for nearly every distance from 1000 yds. to 12 m.

Turning professional in 1885, he made three matches with W. Cummings, but only succeeded in winning the mile. In 1886 they met again, George winning the mile (in the world's record time of 4 mins. 12 $\frac{1}{2}$ secs.) and the ten miles. George has won 12 amateur track championships and over 1,000 prizes.

George, WALTER LIONEL (b. 1882). British author. Born and educated in Paris, he tried various occupations before taking to journalism in 1907. His first work was *France in the 20th Century*, 1908. His novels, in which he deals outspokenly with life's problems and presents an interesting amalgam of English and French methods, include *A Bed of Roses*, 1911; *Israel Kalisch*, 1913; *The Making of an Englishman*, 1914; *The Stranger's Wedding*, 1916; and *Caliban*, 1920. Deeply interested in feminism and allied subjects, his studies in that direction, *Women and To-morrow*, 1913, and *The Intellect of Woman*, 1917, are notable.

George Dandin; OU, LE MARI CONFONDU (George Dandin; or, The Baffled Husband). Three-act comedy by Molière, first produced at Versailles, July 18, 1668. Dandin is a rich peasant who marries above his station and has the privilege of settling the debts of his wife's parents. They with their daughter render his life wretched, especially by making him out to be wrong when he is right; hence his remark, *Vous l'avez voulu, vous l'avez voulu, George Dandin!* (You would have it, you would have it, George Dandin!).

George Inn, The. Famous old coaching inn, in Southwark, Surrey. It is No. 77, Borough High Street, was built early in the 16th century, owned in 1558 by Humfrey Colet, M.P. for Southwark, burnt in 1670 and 1676, and partly pulled down in 1889. The picturesque fragment remaining is all that has survived of the old Southwark inns mentioned by Stow in his Survey, 1598. See London Vanished and Vanishing, P. Norman, 1905.

George Junior Republic. Industrial self-governing society for young people in the U.S.A. It is in Tompkins co., New York State, 9 m. from Ithaca. It was founded by William Reuben George, a native of a neighbouring village, in 1895. He was a New York business man, who had done a good deal of work in providing holidays for city children. The idea behind it was that it should be a settlement for children, who should work for what they enjoy, and govern themselves, as do the citizens of a modern state. The motto of the society is "Nothing without labour."

Boys and girls usually remain in the settlement for several years. Fifteen is the age at which they become full citizens, when they are eligible for the vote and for positions in the little state. They make their own laws, subject only to the assent of the superintendent; and live in houses under the care of house mothers. A variety of industries are carried on. There are colleges and schools; religious services, but no sectarian tests. Several similar institutions have been established in the U.S.A. See The Junior Republic: its History and Ideals, W. R. George, 1910.

Georgetown (formerly Stabroek). Seaport and capital of British Guiana, S. America. It stands near the mouth of the

river Demerara, with a fortified harbour and lighthouse. The city, sometimes called Demerara, lies below the level of high water, which is kept out by a sea-wall called the Ring. The houses are mostly of wood, the streets are broad and shaded by palm trees, and there are several canals. The chief buildings are the Anglican and R.C. cathedrals, government buildings, several colleges and hospitals, botanical gardens, museum, library, and an asylum.

The rlys. connect up with Mahaiica and Rosignol. The climate is humid and hot, and owing to the swampy surroundings is unhealthy. The exports include coffee, sugar, cocoa, rum, gold, and balata. The lack of good drinking water has been overcome by boring artesian wells and the provision of storage tanks. Pop. 54,006.

George Town. Seaport of the Straits Settlements, capital of Penang. It stands on the N.E. shore of Pulo Penang, also called Prince of Wales Island and Area Island, with a fine harbour, second only to Singapore, on the W. coast of the Malay Peninsula. It is strongly fortified, and has an arsenal, barracks, and several hospitals. The chief exports include rice, sugar, pepper, and tin. Pop. 101,182, $\frac{1}{3}$ Chinese, $\frac{1}{3}$ Indians, $\frac{1}{3}$ Malays.

Georgetown. Part of the city of Washington, U.S.A. It stands on the Potomac river, at the head of navigation, and is about 2 m. W. by N. of the Capitol. It is the seat of Georgetown University and of several colleges, and has a number of industrial plants, including flour mills. Down to 1871 it was a separate city, but in that year its charter was withdrawn and it was incorporated in the District of Columbia, becoming a part of the city of Washington seven years later.

Georgetown. Co. and co. town of S. Carolina, U.S.A. The town is situated on Winyah Bay, 60 m. by rail N.E. of Charleston, and is the port for the farm products of the fertile district drained by the Pee-dee river and its tributaries. The harbour is mainly used by coasting and river vessels. Here Lafayette landed on his first visit to the States. Pop. 5,500.

Here the Chesapeake and Ohio canal crosses the Potomac river by an aqueduct 1,446 ft. in length.

Georgia. One of the thirteen original states of the U.S.A. Founded in 1733, it was named after George II. Situated in the S.E. of the country, it is bounded on the N. by Tennessee and N. Carolina, S. by Florida, W. by Alabama, and E. by S. Carolina and the Atlantic Ocean. Its area is 59,265



Georgia. Map of the North American state founded in 1733

sq. m., somewhat larger than England and Wales. Its coast line is much indented and is fringed by numerous islands, separated from the mainland by shallow sounds. The soil in the coastal district is suitable for the production of sea-island cotton. The surface comprises three natural divisions—Upper Georgia, the mountainous district on the N.W., Middle Georgia, a broad plateau, and Lower Georgia, a swampy region. The land is drained chiefly by the Savannah, which partitions the state from S. Carolina, the Ogeechee, and the Altamaha, flowing to the Atlantic, and the Chattahoochee on the W. frontier.

Cotton is the staple product, maize coming next; fruit and tobacco are also cultivated. The forests of pine, oak, etc., cover a considerable area. Fishing and mining, gold, silver, coal, manganese, etc., are flourishing industries, and manufactures of cotton goods, and lumber and timber products employ thousands of workers. Higher education is provided by a state and other universities, besides several colleges. The rlys. of the state have a length of 7,500 m., besides 500 m. of electric track. Two senators and 12 representatives are returned to Congress. Atlanta is the capital; other important towns being Augusta, Macon, Columbus, and Athens. The principal seaports are Savannah, Darien, St. Mary's, and Brunswick. The climate is varied. Pop. 2,935,617, of whom more than two-fifths are negroes.

Colonisation was largely due to the efforts of General Oglethorpe, who was instrumental in settling debtors and other unfortunate persons in it, the first group sent over in 1733 making Savannah their home. Nineteen years later Georgia became a province. During the Revolutionary War, Savannah



Georgetown, British Guiana. Government buildings of the colony

was taken by the British, who retained it until 1782. The Creek and the Cherokee Indians were removed from the state between 1832 and 1838. Georgia seceded from the Union in 1861, but was readmitted in 1870. See *A Student's History of Georgia*, L. B. Evans, 1898.

Georgia, GULF OR STRAIT OF. Inlet of the N. Pacific Ocean, dividing Vancouver from the British Columbian mainland. Its N. extension, Queen Charlotte Sound, connects with the Pacific Ocean, while its S. continuation leads to Juan de Fuca Strait and Puget Sound. Its length is about 250 m., its breadth 29 m.

Georgia. Republic formed from parts of the Russian governor-generalship of Caucasia. It has an area of 35,500 sq. m. and an estimated pop. of 3,176,000, is bounded N. by the Caucasus mts., E. by the republic of Azerbaijan, S. by the Armenian republic of Erivan, and W. by the Black Sea.

A deep valley corridor runs for 500 m. between the Black and Caspian Seas, with the lofty Caucasus range rising steeply above it to the N., and the Armenian mts. almost as steeply skirting it on the S. The foothills from both ranges meet across the valley about 100 m. from the Black Sea, and form a watershed, the Suram mts. Westward from these low mountains flows the river Rion to the Black Sea, and eastward the Kura to the Caspian. Georgia is the rich and sheltered land along these rivers for 250 m., and the highlands N. and S. that enclose the valley.

Geographical Features

Through the two valleys, and tunnelling the Suram mts., is the rly. from Batum to Baku, the centre of the petroleum industry of Azerbaijan, and the oil-pipe to

the Black Sea coast follows the line. The area of Georgia E. of the little watershed is grouped round the ancient city of Tiflis, the capital; and the westward slope centres on Kutais. Batum is neutralised to serve the three republics of Georgia, Armenia, and Azerbaijan as their principal port, and Poti at the mouth of the Rion serves the Kutais province. N. of Poti a narrowing strip of the E. Black Sea coast, between the mt. range and the sea, past Sukhum and Sochi to Tuapse, has joined Georgia; and S. of Batum the republic includes the Armenian highlands through Ardahan, formerly in the province of Kars. The Sukhum district in the N.E., backed by the slopes of the Caucasus, resembles the Riviera in its agreeable climate, and, being wider, is more fertile. It lacks rlys., but a main road connects it with the rly. junction of Santredi on the Rion river.

Crops and Minerals

Georgia has an exceptionally wide range of productions. Wheat, maize, barley, cotton and tobacco are grown, and tea is harvested on the Black Sea coastal strip. The Armenian hills are heavily timbered. Below Tiflis, where the valley opens out towards Azerbaijan, there are wide cattle-breeding steppes. Silk is extensively produced. The vine flourishes, especially on the Caucasian side of the Kura valley below Tiflis. Fruits abound, including oranges and lemons, olives, apricots, peaches, plums, and apples. The mineral wealth is varied and considerable. Manganese ore is the most worked, but copper and coal are also mined. Oil is present, though not so abundantly as in the lower end of the Kura valley in Azerbaijan.

The Georgians, as a race, have a history to be proud of. Though they have held a valley that has been one of the world's natural highways from E. to W., and have been pressed upon almost continuously by more powerful nations, they have kept their independence for 2,000 years, and preserved their identity, language, and religion with unconquerable tenacity. In 302 B.C. they threw off the yoke imposed by Alexander the Great. Christianity became the state religion in A.D. 323, and though the country has been occupied temporarily by the Arabs, the Turks, and the Persians, and overrun and devastated by hordes of Mongols under Jenghiz Khan and Tamerlane on their way to the W., it has revived and prospered. By its fidelity to Christianity Georgia has always been an annex of Europe, an outlying branch of the Eastern Church rather than an Asiatic land.

It was its religious associations that at last temporarily destroyed its independence. Pressed heavily by the Turks at the end of the 18th century, the Georgian king, George XIII, appealed to his coreligionist, the tsar of Russia, for protection. The Russians entered the country, and, promising to preserve in it all the Georgian rights, annexed it by assent in 1801. The attempt to Russianise a people who had an independent existence 1,000 years before Russia was heard of, failed, and when in Oct., 1917, the Bolshevik government was formed in Russia, the three chief races on the southern flank of the Caucasus range consulted as to their future. As a result, the democratic republic of Georgia, the Armenian republic of Erivan, together with the Tartar republic of Azerbaijan agreed to form one independent government as the Federal Democratic Republic of Transcaucasia, each republic retaining local government.

The New Republic

A united parliament or diet (called the *Seym*) met April 22, 1918, but, after five weeks of disagreement, the federal republic was dissolved, and each of the temporary partners organised a government in its own capital. Georgian separate independence was proclaimed on May 26, 1918, and on March 12, 1919, an elected assembly, voted for by both sexes, ratified what had been done. Following a revolution a Soviet government was set up in 1921. See *The Kingdom of Georgia*, O. Wardrop, 1888; *Mineral Resources of Georgia and Caucasia*, D. Ghambushelze, 1919.

John Derry



Georgia. Map of the Caucasian Socialist republic, formerly portion of the Russian empire, in which a Soviet government was set up in 1921

Georgian. Style of architecture which prevailed in Great Britain during the reigns of the first three Georges (1714-1820). A product of the later Renaissance, it owed its inspiration mainly to Sir Christopher Wren. Its best characteristic was simplicity of plan and elevation; its worst was a tendency towards the pedantic. Wren's

"sash" windows symmetrically disposed. A porch was occasionally employed, but the typical Georgian doorway, as seen in certain parts of London and its environs, was enclosed by classic columns carrying their correct entablature, and surmounted by a hood which varied in shape and in the extent of its projection, the tendency being towards a shallower type.

The roof was invariably "hipped," i.e. it sloped backwards from each side, and the front slope was pierced by a row of dormer windows. At the beginning of the period it was the practice to extend the roof so as to form overhanging eaves with a heavy wooden cornice; later, the roof was stopped at the edge of the walls by a more or less substantial parapet which had the effect of heightening the façade. The interior decoration

will be 450 m. long, 200 ft. wide, and 22 ft. deep, with 23 locks to regulate the water, and will take vessels of from 8,000 to 10,000 tons. By using the Back River, an arm of the St. Lawrence, the Lake of the Two Mountains, the Ottawa River, Lake Nipissing, which will be its central point, and the French River, it will only be necessary to construct about 30 m. of actual canal, although parts of the existing waterways will need deepening. The main advantages claimed for the canal, which will be wholly in British territory, are that it will bring the Canadian Lake wheat ports 800 m. nearer to Liverpool than they now are. The cost has been estimated at £30,000,000, and a survey was made in 1894-98.

Georgics (Gr. *georgikē*, husbandry). Didactic poem by Virgil in four books. Composed 37-31 B.C., it deals with agriculture, fruit trees, domestic animals, and bees. It abounds in passages of great beauty, while technically it is a flawless poem.

Geotropism (Gr. *gē*, earth; *tropē*, a turning). Sensitiveness of plants to the effects of gravity. The main roots of plants grow vertically downwards, due to some unexplained action, though the subsidiary roots may extend horizontally or in any intermediate direction. The twining of plants, i.e. creepers, is called lateral geotropism.

Gepidae. Ancient Teutonic people, whose home in the 3rd century A.D. is said to have been the islands in the Baltic at the mouth of the Vistula. Akin to the Goths, and speaking a similar language, they accompanied them in their advance southwards and settled in what is now Hungary. After suffering defeats from Attila and Theodoric, they were conquered by the Lombards in 566. They are not heard of again as an independent people, being merged in the Avars (q.v.).

Gera. Town of Thuringia, Germany. It stands on the White Elster, 35 m. S.W. of Leipzig. The chief buildings are the town hall, a restored 16th century building standing on the market place, a modern theatre, and a museum; S. John's is the chief of several churches. On the Hainberg



Georgian. Mompesson House, in the Close, Salisbury. Typical of this style of domestic architecture

By courtesy of Country Life

example was followed by numerous professional architects.

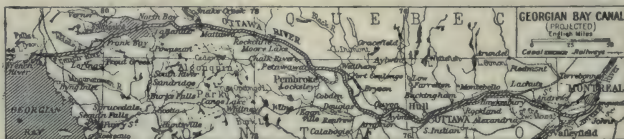
Contemporary with him were William Kent, who made an effective design of the Horse Guards, Whitehall, and spoilt a good portion of Wren's interior decoration at Kensington Palace; Isaac Ware, who built Chesterfield House, and in the middle of the 18th century was considered the leading authority on architectural matters; and Sir William Chambers (q.v.), who outlived both of these, and was responsible for Somerset House (q.v.), one of the best creations of Georgian classicism in London. Not even Chambers's work, however, escapes the charge of pedantry.

It is chiefly in the smaller houses that the significance and charm of "Georgian" may be found. In the towns it was uniformity that was principally aimed at, and any one of the many Georgian streets in London can show that Georgian architects, in achieving uniformity, gained also two other essentials of successful street architecture—repose and dignity. In plan the Georgian house is a plain rectangle, solidly constructed, very frequently of red brick. Its façade is always of the plainest description, and is pierced by rows of tall

of Georgian houses culminated in the work of Robert Adam (q.v.) and his brother. Georgian architecture has latterly been revived with great success in the building of garden cities and suburbs. See Architecture; consult also The Decorative Part of Civil Architecture, W. Chambers, 1825.

Georgian Bay. Opening of Lake Huron. It is the north-eastern arm of the lake, and is almost cut off from the main waters by a peninsula which is part of Ontario, and Grand Manitoulin Island, the opening between the two being only about 30 m. wide. It is about 120 m. long and 50 m. broad, and its various bays receive several of the rivers of Ontario.

Georgian Bay Canal. Canadian canal, suggested and planned but not yet constructed. It is intended to join Georgian Bay with the St. Lawrence at Montreal. It



Georgian Bay Canal. Map of the course of the projected canal which will bring the Canadian Lake wheat ports 800 miles nearer Liverpool

opposite the town is a castle, the residence of the princes of Reuss. The town is an old one, having been a municipality since the 11th century, but most of its buildings are modern. It has a number of industries, including the manufacture of textiles, machinery, and various kinds of leather. It is also a printing centre. It has been part of Reuss since about 1250. Pop. 49,300.

Gerace. City of Italy, in the prov. of Reggio di Calabria near the ancient Locri. It stands on the slope of a mountain, at an elevation of 1,570 ft., 4 m. from the sea, 58 m. by rly. N.E. of Reggio. It has a restored cathedral, wrecked by an earthquake in 1783, with Romanesque remains. In the vicinity are sulphur springs and iron and coal mines, while the district is noted for its wine called Lacrima di Gerace. The ruins of Locri, founded in the 7th century B.C., lie nearer the coast, and near the old Torre di Gerace were discovered ruins of an

volatile oil. Others are rich in oxalic acid, and some have edible tubers. They are so called from the resemblance of the seed-pod to a crane's bill (*Gr. geranion*).

Geranium. Typical genus of the order Geraniaceae. It consists mostly of small plants with small regular flowers and palmate or divided leaves, often with a pungent odour. *G. anemoniaefolium*, native of Madras, however, has a somewhat shrubby stem a foot high, and large purplish-red flower. *G. pratense* (Europe) has large blue flowers, and the equally fine *G. sanguineum* (Europe and W. Asia) has blood-red flowers. *G. lucidum* (Europe, W. Africa, Asia), though its bright rosy flowers are small, has a handsome appearance owing to its red stems and general shining glossiness. *G. tuberosum* and *G. dissectum*, from S. Europe and Australia respectively, have edible tubers. Garden geraniums are really pelargoniums (*q.v.*). See Balsam; Woodsorrel.

Bautzen, 1815, was made a count by Napoleon. In 1814 Gerard made his peace with the new regime, but rejoined Napoleon on his return from Elba and fought at Ligny. He was permitted to return to France in 1817, was made a marshal in 1831, and, commanding the Belgian expedition, took Antwerp in 1832. He died at Paris, April 17, 1852.

Gerard, JAMES WATSON (b. 1867). American diplomatist. Born at Geneseo, New York, Aug. 25,



J. W. Gerard,
American diplomatist

1867, and educated at Columbia University, he became a barrister in 1892, and practised in New York. He became prominent as a Democratic politician and as an officer in the National Guard. In 1908 he was chosen as associate justice of the Supreme Court, an



Geranium. Foliage and flowers of, 1, *G. sanguineum*, Europe and Western Asia; 2, *G. anemoniaefolium*, Madras; 3, *G. lucidum*, Europe, West Africa, Asia

Ionic temple. Pop. 11,100. *Protr.* Jay-rah-chy.

Geraldton. Port of W. Australia. It stands on Champion Bay, and is the chief town N. of Perth, from which, by rly., it is 270 m. distant. N. by W. It is also the terminus of a rly. which penetrates inland for 600 m., serving the Yalgoo, Mt. Magnet, Cue, and Nannine goldfields. Exports comprise not only gold, silver, and lead, but also wool and sandalwood, the produce of this area. Pop. 3,494.

Geraniaceae. Large natural order of plants, chiefly herbs. They are natives of temperate and tropical regions. The leaves are opposite or alternate, of varied form; the flowers regular or irregular. Many species have astringent or aromatic properties, or abound in

Gerar. Town in the Philistine country, E. of Gaza. Abraham and Isaac settled there for a time, and the latter had much trouble with the local herdsmen.

Gerard, ÉTIENNE MAURICE, COUNT (1773-1852). French soldier. Born in Lorraine, April 4, 1773, he

entered the army in 1791 and became chief-of-staff to Bernadotte by 1805. He was prominent in the battles of Austerlitz, 1805, Jena, 1806, and Wagram 1809, fought also in Spain, and in recognition of his part in the victory of



Etienne Gerard,
French soldier

appointment he held until 1913, when he was sent to Berlin as ambassador. He was there when the Great War broke out, and it fell to his lot to look after British interests in Germany, and especially those of the prisoners of war. He had the onerous task of conducting the negotiations just before the U.S.A. entered the Great War, and for some days was in a position of great difficulty. He returned home and wrote *My Four Years in Germany*, 1917, and *Face to Face with Kaiserism*, 1918, severe indictments of Germany as it was before 1919.

Gerard, JOHN (1545-1612). English botanist. Born at Nantwich and educated as a surgeon, in early life he travelled in N. Europe, and settled to practise in Holborn,

London. On the hill facing the Fleet river he had a wonderful physic garden with over 1,000



John Gerard,
English botanist

species of plants, of which he published a list, 1596. He is chiefly famous for his *Herball* or *Generall Historie of Plants*, 1597, an important botanical work, based on the *Pemptades* of Dodoeus, 1583, while the large majority of the woodcuts were derived from the *Eicones* of Tabernaemontanus, published at Frankfurt, 1590.

Gérardmer or **GEROMÉ**. Town of France. In the dept. of Vosges, it is 18 m. S. of St. Dié. It stands near the lake of the same name, high among the mountains, and is, on account of the beautiful scenery around it, much visited by tourists. It has some manufactures, and its cheeses are famous. In the market place is an enormous lime tree, 300 years old. There are baths and a hydropathic establishment in the town, while tramways lead to various beauty spots in the neighbourhood. Gerard, duke of Alsace in the 11th century, is its reputed founder. Pop. 10,000.

Gérardy, JEAN (b. 1877). Belgian violoncellist. Born at Spa, Dec. 7, 1877, the son of a musician, he studied the cello at Verviers. In 1888 he began his public career, touring Europe and America, and establishing himself among the first of living virtuosi.

Gerasa. Ancient city of Palestine, a member of the Decapolis. It is situated among the mountains of Gilead, about 20 m. to the E. of the Jordan, and is now called Jerash, possessing notable Roman remains of the 2nd and 3rd centuries, A.D. It has been identified with Gadara and other places, but the identification is open to doubt.

Géraud, ANDRÉ. French journalist, better known under his pseudonym of *Pertinax*. His articles during the Great War, published in the *Écho de Paris*, attracted wide attention by their concise and singularly well-informed summaries of the military situation, and during the Peace Conference in 1919 his pen became a considerable power. He was a formidable critic of Wilson and Lloyd George, and during 1920 showed marked hostility to the trend of British foreign policy, both in the East and in regard to Germany. He was the French correspondent of *The Daily Telegraph*.

Gerenuk. East African antelope. Reddish fawn in colour, with a wide band of black down the back, it is remarkable for its very long neck which is out of all proportion to its body and gives it almost the appearance of a diminutive giraffe. Its chief food is the leaves and twigs of small trees and bushes.

Gerhardt, PAUL (c. 1607-76). German hymn-writer. Born in Saxony, and educated at Wittenberg, he became a Lutheran minister at Berlin and elsewhere. He ranks next to Luther among the German hymn writers, many of his hymns having been translated into English, the best-known being, *Commit thou all thy griefs*. He died at Lübben, June 7, 1676. *See Hymn*.

Géricault, JEAN LOUIS ANDRÉ THÉODORE (1791-1824). French painter. Born at Rouen, Sept. 26,



J. Géricault,
French painter

1791, he studied art under Charles Vernet, and Pierre Guérin. His careful picture of a mounted chasseur officer at the Salon of 1812 was his first success in his series of military subjects. After fighting for the king in the Hundred Days, he visited Rome and Florence. His most notable picture was *The Raft of the Medusa*, 1819 (Louvre), a shipwreck scene of exceptional size (24 ft. by 18 ft.), painted with a fine sense of natural form and dramatic detail, and much admired by the romantic school of painters. It was exhibited with success in London, 1820-22, Géricault then living there. He died in Paris, Jan. 26, 1824. His work marks the breaking away of French painting from the classic tradition of David and his followers.

Gerizim. Hill of Samaria. It stands near Shechem or Nablus, and is associated with an adjoining hill, Ebal. The curses and blessings in connexion with the law were pronounced respectively from these two hills, and the Samaritan temple was built on the former.

Gerlsdorfer or **FRANZ JOSEFS SPITZE**. Mountain peak of the Hohen Tatra range in the N.W. Carpathians. It is the highest peak of the range (8,737 ft.).

Germ (Lat. *germen*, bud). In embryology, the primitive vital particle from which an organism (animal or plant) develops; in bacteriology, a bacillus or micro-organism from which a disease originates. The term is also used figuratively for the ultimate be-

ginning of a thing, e.g. the germ of an idea. *See* Bacillus; Bacteriology; Embryology.

Germ, THE. Magazine founded to further the views of the Pre-Raphaelite Brotherhood in poetry and art, published in 1850. Only four numbers were issued, the title for the last two being changed to *Art and Poetry*. Edited by William M. Rossetti, in it appeared several poems by Christina and Dante Gabriel Rossetti.

German. Term used for anything belonging to Germany. Before the Great War it was applied as a distinctive mark to certain German colonies, e.g., German East Africa, German South-West Africa, and German New Guinea. As these now belong to other Powers the term German has been dropped in this connexion. *See* New Guinea; South-West Africa; Tanganyika Territory.

German, EDWARD (b. 1862). British composer. Born at Whitchurch, Salop, Feb. 17, 1862, he studied at the

Royal Academy of Music, London. In 1888 he became musical director at The Globe Theatre, and while there produced the incidental music to *Edmund* *German* *Russell*



Richard III (1889) which first made his reputation, enhanced by his music to Henry VIII, written for The Lyceum in 1892. He completed Sullivan's unfinished opera, *The Emerald Isle* (1901), and composed *Merrie England* (1902), *A Princess of Kensington* (1903), and *Tom Jones* (1907), as well as orchestral symphonies, suites, and songs. His work is marked by a fluency and melodiousness which made it widely popular.

German Catholics (German, *Deutschkatholiken*). Religious sect in Germany. It separated from the Roman Church in 1844, repudiating the papal decrees concerning mixed marriages and celibacy of the clergy. They were led by two ex-priests, named Ronge and Czerski; and at their first council held at Leipzig, in 1845, adopted a simple confession of faith of a Protestant character. They had at that time about 170 congregations; but three years later many of these were dissolved through internal dissensions. Many of their adherents returned to the Roman Church; and in 1859 most of the others joined a rationalistic sect known as the Free Congregations.

Germania. Latin name for Germany. As such it is the title of the work of Tacitus on the manners and customs of the tribes of Germany about the opening of the Christian era, this being the chief authority on the subject. It is also used as a personification of the German people as Britannia is of the British. An example of this is the gigantic statue of Germania, 33 ft. high, which stands on the Niederwald, overlooking the Rhine. It commemorates the war of 1870-71 and the consequent union of Germany. See Germany; Niederwald.

Germanicus, CAESAR (15 B.C.-A.D. 19). Roman general. A son of Nero Claudius Drusus, Germanicus was nephew of the emperor Tiberius. Having distinguished himself against the Pannonians (A.D. 7-9), in 12 he was consul, and as commander in Gaul and on the Rhine, quelled a dangerous mutiny.



Germanicus

From head of marble statue found at Oabii, 1792, now in the Louvre, Paris

To occupy his soldiers, he crossed the Rhine, attacked and defeated the Marsi and Chatti, and in 16 obtained a victory over Arminius on the Campus Idistavicus, near Hameln on the Weser.

Recalled to Rome by the jealous Tiberius, he was sent with extensive powers to settle affairs in the East. His mission was successful, but he was continually thwarted by Calpurnius Piso, governor of Syria, probably instructed by Tiberius. Returning from a visit to Egypt, he died at Daphne, near Antioch, poisoned, it was said, by Piso. His body was taken to Rome and buried amidst general grief. His free translation of the *Phaenomena*, an astronomical poem by Aratus, is extant. Among his children were the future emperor Caligula and Agrippina, mother of Nero.

Germanium. Rare metal. It is interesting from the fact that it is one of the elements the existence of which was predicted long before it was discovered, and its principal physical characters described by the Russian chemist Mendeléeff. Its actual discovery was made by the German chemist, Clemens Winkler, in 1886, in a rare mineral called argyrodite, found near Freiberg, Germany. Winkler ascertained the percentage composition of the mineral to be silver 74.72, sulphur 17.13, germanium 6.93, with traces of iron, zinc, mercury, and oxygen.

The metal has also since been found in euxenite, a very complex mineral containing also uranium, erbium, tantalum, yttrium, and cerium. Its chemical symbol is Ge; atomic weight, 73.32; specific gravity, 5.469; melting point, 900° C. (1,652° Fah.). Silver white in colour, brittle, in many respects resembling tin, it resists atmospheric influences; is insoluble in hydrochloric acid; burns in the Bunsen flame, giving off white vapours; and crystallises from the molten condition in beautiful greyish white, metallic, eight-sided crystals.

German Measles, RUBELLA OR RÔTELIN. Acute infectious fever occurring among both children and adults. The organism responsible for the disease has not been identified. The symptoms are usually mild. Slight headache and chilly feelings are followed in a day or two by the appearance of a rose-red rash, first on the chest, which afterwards spreads over the whole body. Most often it consists of separate raised spots, but sometimes these run together. The throat is sore, the glands in the neck may be somewhat swollen, and there is often a small rise of temperature. The rash disappears in a few days, and the symptoms abate. Complications are rare. Treatment consists in keeping the patient in bed, or at least in a warm, well-ventilated room, and feeding him on a light diet. A purgative may be necessary. The patient should be regarded as capable of conveying the infection for a fortnight after the attack, and therefore kept isolated as thoroughly as possible.

German Silver. Alloy of copper, nickel, and zinc. The best proportions are probably 51.6 p.c. copper, 25.8 p.c. nickel, and 22.6 p.c. zinc, the alloy formed having a beautiful, bluish white, silver colour, and being largely used for the manufacture of spoons, forks, and candlesticks, as well as personal ornaments. The proportions used in practice vary, while small quantities of other metals, lead, tin, or iron in particular, are sometimes added, either to cheapen the cost or to impart some special property. An alloy known as white copper, consisting chiefly of copper and nickel, has been used in Saxony from remote times, and was doubtless the precursor of German silver. The Chinese *pack-fong*, meaning white copper, is of the same class. See Alloy; Pack-fong; Metallurgy.

German Sixth. In music, chromatic chord consisting of a bass note with a major third, perfect fifth, and augmented sixth

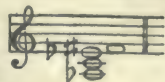
above it, as here shown. It belongs to the key of its major third—in this case C, but it can be used also in other keys. The origin of the name is obscure. See Augmentation Chromatic; Harmony; Interval.

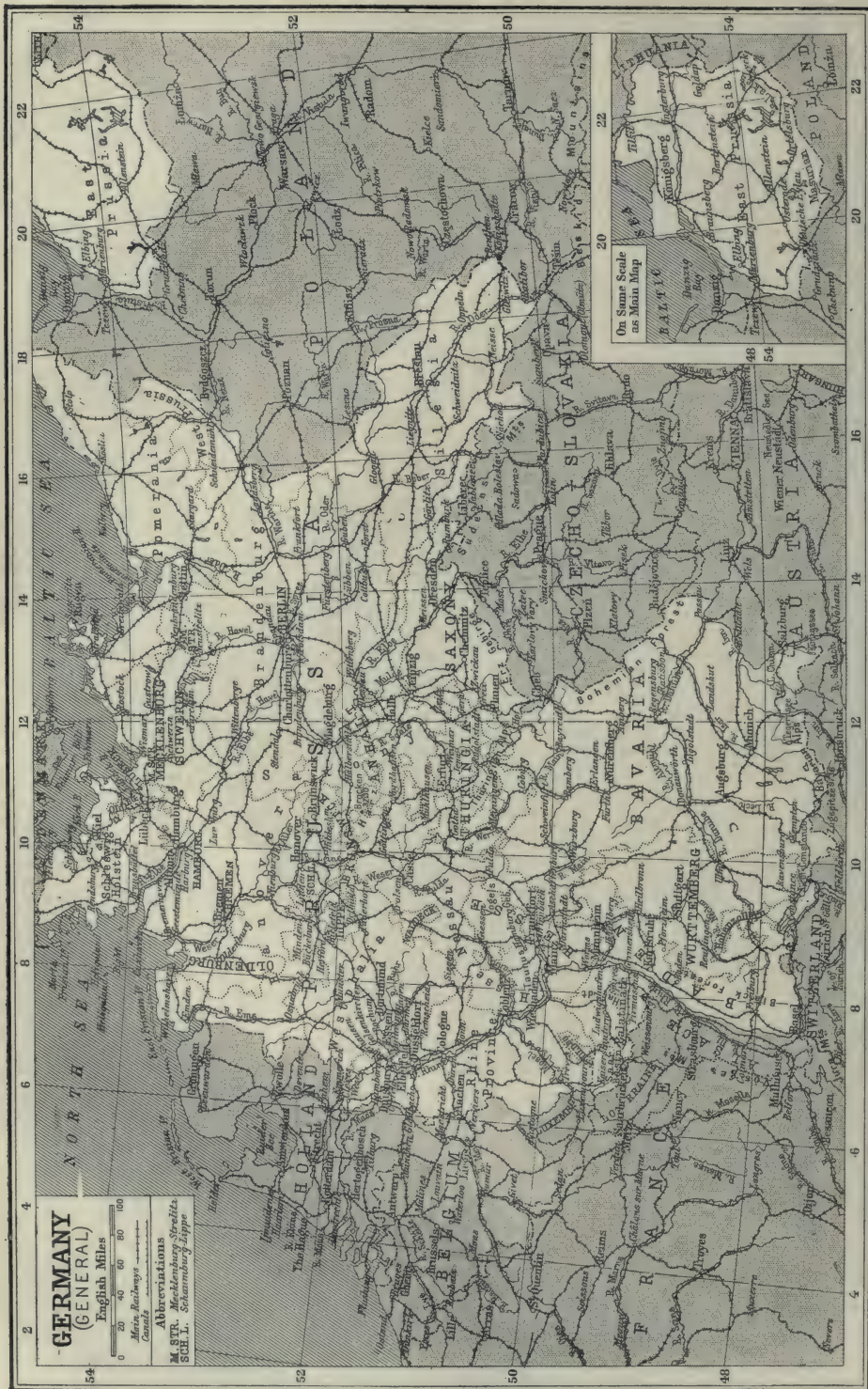
German Tinder OR AMADOU. Hard, corky substance of *Fomes fomentarius*, a destructive tree-fungus, after it has been cut in thin slices, hammered out, and treated with saltpetre. Before the invention of the friction-match it was much used to obtain fire from the flint and steel tinder-box. Pieces of the dried fungus, without treatment, will smoulder for hours after a corner has been ignited. Without the saltpetre it was used in the contrivance of caps and other articles of clothing. An inferior amadou is made from *Fomes igniarius*.

Germantown. Former borough of Pennsylvania, U.S.A., in Montgomery co. In 1854 it became a part of Philadelphia, whose twenty-second ward it now is. A residential district, about 5 m. N. of the central point of the city, it contains several historical houses, and is notable as the site of the first paper mill erected in the U.S.A., and for the publication of the first American edition of the Bible.

Germantown was settled in 1683 by thirteen families from Crefeld in Germany, and became a borough in 1689. It soon became a stronghold of the Society of Friends, who built a meeting-house here about 1693. In the 18th century it was a very flourishing place. It has two inns, the King of Prussia and the Mermaid, dating from that time. Its founder, Francis D. Pretorius, was a schoolmaster here, and is notable as one of four who signed the first public protest against slavery. In 1789 an attempt was made to fix the capital of the United States at Germantown, and it was actually the capital in 1793, owing to an outbreak of yellow fever in Philadelphia (*q.v.*). It became part of Philadelphia in 1854.

The battle of Germantown was fought between the British and the Americans, Oct. 4, 1777. A British force under Sir W. Howe was in the town when it was attacked by Washington. With his men advancing in two bodies, he attempted a surprise, but after an initial success this failed. There was some fighting in and around the houses of the town, but the end was the retreat of the Americans with a loss of about 700 men. The losses of the British were somewhat fewer.





GERMANY : GENERAL MAP OF THE COUNTRY SHOWING THE FRONTIERS IN 1923. INSET, EAST PRUSSIA, NOW SEPARATED FROM THE MAIN BODY

GERMANY: PEOPLE, HISTORY & LITERATURE

HAMILTON FYFE, Prof. J. G. ROBERTSON, and A. W. HOLLAND

Germany is dealt with as are the other great countries of the world. In addition to this sketch, see the articles on its cities, rivers, mountains, etc.; its rulers and statesmen; its scholars and men of letters. See also the articles on Bavaria; Mecklenburg; Prussia; and the other states of the federation; Empire, Roman; Hanseatic League; Hohenzollern; Reformation

Germany is the largest and most powerful state of Central Europe. It occupies the middle of the Great



Germany.
Arms of
the former empire

European Plain as well as parts of the Alpine forelands, and connects Eastern Europe, Russia, with Western Europe, France.

The chief lines of communication, both from north to south and from east to west, run through it. Its frontiers are mostly on land, the longest being that which divides it from Poland; it also borders on France, Belgium, Holland, Switzerland, Denmark, and Czechoslovakia. Its sea coast frontier of 1,200 m. is partly on the North Sea, partly on the Baltic. Its area, as fixed by the treaty of Versailles, is 171,910 sq. m.

PHYSICAL FEATURES. The greater part of the country is flat. Throughout the northern districts the plain is scarcely broken; in the south there are several systems of hills and regions of great beauty. The most northerly range is the Harz, consisting of very pretty valleys and small heights well wooded and easy to climb, which make it a favourite holiday ground. Of much the same character are the Black Forest and Bavarian highlands. The former does not run to summits much over 4,000 ft., but these afford charming views, and on the slopes flowers of Alpine and sub-Alpine species bloom in large variety. On the Bavarian border the highest point is 9,710 ft., and there are many peaks between 4,000 and 8,000 ft.

Wealth in Timber

Forestry is treated as a branch, and a very important branch, of agriculture. About one quarter of the country before the Great War (53,000 sq. m.) was forest land, many of the woods belonging to the state or to local authorities; less than half were private property. Great care was taken to keep the forests in order, and to replant regularly as the trees were cut down. Private owners were compelled to do this. Thus four-fifths of the forest area, systematically cultivated, became a source of large public and private revenue.

The Swabian and Franconian Jura, considered to be a continuation of the Swiss mountains, are

not so attractive. The slopes and summits are dreary, the valleys boggy, the lakes uninteresting, the winds cold. Far pleasanter is the hilly region between the rivers Neckar and Main. The Spessart range, N. of the Main, is remarkable for its forests of oak and beech, vast in extent; it connects with the Vogelsberg and so S.W. with the Taunus, famous for its water cures, including those of Homburg and Wiesbaden. The Thuringian Alps, which are well wooded, extend for about 150 m. In Saxony there are several hilly districts, which are dignified by the name of the Saxon Switzerland.

RIVERS AND CANALS. The rivers, in order of importance, are the Rhine, the Elbe, the Weser with the port of Bremen, the Vistula running in from Poland, and the Oder. Hamburg, near the mouth of the Elbe, was Germany's greatest port, but it suffered so severely during the Great War that it became merely a shadow of its former prosperous self. Bremen, its chief rival, was hit almost as hard. Other ports, which had a flourishing trade before the war, are Lübeck, Stettin, Danzig, now a free port, Elbing, and Kiel.

Lakes as Holiday Resorts

The canals are numerous and well used. Of the 8,646 m. of water ways suitable for transport, 1,446 m. are canals and 1,374 m. canalised rivers. The most ambitious work of this kind is the Kiel Canal, connecting the North Sea with the Baltic. There are many lakes. The largest is the Bodensee (lake of Constance), which is between Bavaria and Switzerland. Many of them have summer resorts on their banks; of these Tegernsee, Schleiersee, and Königsee in Bavaria are the most frequented. There is a lake near Berlin which thousands of holiday-makers visit every summer. Another favourite resort is the island of Rügen, in the Baltic, where are a number of hotels and boarding-houses, full all the hot weather.

CLIMATE. As a rule, the German summers are warmer and more settled than in the British Isles; the winters are colder. The rainfall varies from 66 ins. a year on the Brocken in the Harz to 20 on the Silesian plains. Abundant rain in the hilly districts accounts for the rapid-spreading undergrowth. Any piece of land which is left un-

cultivated and unsown is likely to bear trees, chiefly firs or pines, which grow so quickly that in less than ten years a respectable plantation can be seen. In the forests are to be found here and there wolves and wild boar; wild cats, badgers, and martens abound.



German Republic
arms

A large amount of the soil is sandy, and, for other reasons, unproductive; yet so hard have the peasants worked, and so skilful is the application of knowledge to agriculture, that as a producer of varied crops Germany stands high among the nations. Rye is the cereal chiefly grown; most of the people eat rye bread. Some 15,000,000 acres are under rye, some 5,000,000 under wheat. Potatoes are produced in enormous quantities and sugar beets also. Fruit is plentiful; many of the country roads are lined with cherry, apple, or pear trees. Vines are grown in many parts, and wines are made that have a world-wide fame.

The peasantry are a particularly sturdy race everywhere, industrious, simple in character and in their ways of life. In the more southerly regions their manners are agreeable, they sing and dance well, they welcome strangers hospitably. The northern peasants are more gruff in their demeanour, more calculating in their dealings. When they went to live in cities they very often became socialists, but as long as they remained on the soil they supported the monarchy with unwavering stolidity.

POPULATION. The drift from the country into the towns was steady from the date of the establishment of the empire in 1871. At that time, half of the population depended upon the soil for their livelihood. In 1895 that proportion had dropped to 35 p.c.; fifteen years after it was only 28 p.c. In that period of thirty years the population engaged in mining and other industries rose from 35 p.c. to 42 p.c., and the population engaged in trade and transport from 10 to 13 p.c. Just before the war trade and industry occupied more than half the population, while not more than a quarter were wholly engaged in agriculture. There were,



GERMANY: MAPS ILLUSTRATING THE MEDIEVAL AND MODERN DEVELOPMENT OF THE COUNTRY

however, upwards of 1,750,000 people who tilled the soil in addition to following a trade of some sort. In the north the farmers were obliged to employ a great deal of foreign labour from Russia and Austria. Vast numbers of Italian, Polish, Russians, and other Slav peoples were employed as unskilled labourers and in coal mines. In such conditions there was little emigration. The flow of Germans to the United States, which had been a feature of the later 19th century, and to South America, where they established flourishing settlements early in the 20th century, almost entirely ceased in spite of the rapid growth of the population.

In 1871 the Empire had 41,000,000 inhabitants; this number rose steadily until in 1910 there were close on 65,000,000, and if a census had been taken in 1915 it would certainly have shown 70,000,000. This increase at the rate of about a million a year created in a short time a great many large towns. In 1871 there were only eight which had over 100,000 inhabitants; in 1914 there were more than fifty, and instead of accommodating 4 p.c. of the entire population, they were occupied by 21 p.c.

INDUSTRIES. Nature gave Germany most of the elements required for industrial progress. In the first place, the German coalfields were numerous and rich. In the Rhine province, in Westphalia, in Upper Silesia and on the Saar, the output supplied 90 p.c. of the country's needs. The mines of the Ruhr basin are the richest and have the Rhine close at hand for transport. The French have a claim upon them and other coalfields as recompense for the damage done to French mines during the Great War, but this enforced export ought easily to be borne, for it has been estimated that there is coal enough in Germany to last for 1,300 years at the present rate of consumption.

Iron and Steel

For iron the Germans have never been so well off as they are for coal, and since they lost the ironfields of Alsace-Lorraine, which were specially valuable because they lay close to coal, they have far less than they had before the war. Their ore is also of a poor quality; they were obliged even before 1914 to import a vast amount, something like 10,000,000 tons a year. Yet their production of steel and manufactured iron went ahead so quickly during the last two decades of the 19th century that, whereas in 1882 British foundries turned out twice as much pig-iron as Germany, by

1912 the Germans were producing half as much again as Great Britain. Thus within a generation Germany forced itself into the front rank of industrial nations.

Two movements accompanied this transformation, one a movement of capital into groups controlling vast sums of money and the operations of armies of work-people; the other, a growing dissatisfaction amongst the middle and labouring classes, which took shape in the development of the socialistic party. Founded to all appearance upon the doctrine of Karl Marx, this was indeed a Cave of Adullam to which all resorted who for any reason were discontented and desirous of change. As the trade unions became stronger, the socialists polled at every election a larger number of votes, until in 1912 they had the largest single party in the Reichstag.

Between them the trade unions and the socialist organization did a great deal to prepare the way for the change of system from monarchy to republic which occurred in 1918. They set up libraries, evening schools, colleges for manual workers, inquiry offices which supplied information on all manner of subjects, and made converts by all means possible.

Capital and Combines

The party also controlled a number of newspapers, of which the most powerful, *Vorwärts*, made itself feared as well as hated by the authorities. Thus the voice of the discontented was loud in the land, though it had little influence upon the direction of affairs, chiefly because the socialists mostly put patriotism before principle, and let themselves be deluded like the rest of the population. At the same time the employers formed themselves into associations for the purpose of resisting demands for increased wages and shorter hours.

This was made easier by the grouping which already existed of all the larger capitalists and many small ones anxious for protection. Such companies as Krupp's, the Allgemeine - Elektrizitäts - Gesellschaft, the Hamburg-Amerika and Norddeutscher Lloyd shipping trusts, the colliery combination and the banking combines, had made themselves immensely strong. Individual captains of industry and financiers gained great personal power. Hugo Stinnes, who became prominent during the reconstruction period after the war, was one of the most influential of these, and maintained his influence in spite of the revolution. There were also among the employers syndicates in a number of trades

which were called cartels and exercised a widespread control over industry. Sometimes they merely aimed at inducing manufacturers to sell at the same price, so as not to compete against each other; sometimes they took entire charge of the whole output, arranged for its sale, and relieved the individual factory-owner of any concern, beyond producing the articles required.

These served in some directions a useful purpose, but the feeling against them steadily grew more hostile; they were denounced like the trusts in America, and the state was called upon to regulate or abolish them. There were some, however, and even some socialists, who declared that the cartels represented the next step forward in industrial progress, since they were bound to be turned into state monopolies for the benefit of the people as a whole.

Cheap Electricity

It is certainly doubtful whether, without the electrical combines, Germany could have got such cheap light and power spread so widely over the land. A good many municipalities which had established electrical undertakings found that the public were better served either by selling to or buying current from a private company. Many a village, many a farmhouse, which could never have enjoyed the benefits of electric light, electric power, or electric heating if small enterprise had been alone in the field, had reason to be thankful for the far-reaching tentacles of Siemens-Schückert or the A.E.G. Especially valuable were these advantages to those villagers who worked in their own homes at such trades as weaving, glass-making, toy-making, embroidery, basket-weaving, wood-carving, straw-hat making, and so on.

Half a million people are occupied or partly occupied in home industries altogether, a good many of them in the towns, where they are engaged in tailoring, cigar-making, and the silk and hosiery trades. Most of these occupations are badly paid, 9s. to 18s. a week being reckoned in some districts a fair wage for a whole family working from 10 to 12 hours a day. When German goods began to find their way into England again after the war it was the products of these home industries which came first, and, owing to their cheapness, had the readiest sale.

Not far behind them came dyes, in which the Germans had made themselves pre-eminent, owing to their willingness to spend money on chemical research. In the early

days of aniline dyes England led the way, but German respect for science and the encouragement which its chemists received soon altered the position, and although much was done to enable dyes as good as the German to be made in England, not many months had passed after the conclusion of peace before English manufacturers were sending to Germany again. Thus in dyes the Germans established something like a monopoly, as they had in the finer kinds of lenses and optical glass generally.

Export of Cheap Goods

Another product of great value to them is potash, of which they have very large deposits; this is used so widely in agriculture, and is found so little in Europe, that its possession is most useful. Besides the salt beds from which potash comes, there are many others in Germany of large extent. But it was by the export of manufactured articles rather than of natural products that German wealth so quickly increased during the last fifteen years of the 19th century and the first fourteen of the 20th century. The factories made a speciality of cheapness. They turned out articles which were not of the best quality, but which would meet with ready purchasers.

The progressive movement of German exports led to a large increase in shipping, and out of this grew, not only the navy which was begun in 1897 with a complete seven years' programme, and then enlarged in every succeeding year, but also the desire to compete with Britain in passenger carrying. The German liners were as large and as luxurious as any.

GOVERNMENT. Since the abdication of the third German emperor, William II, the form of government has been republican. All citizens over 20 years of age, women as well as men, have votes, and return members to the Reichstag of the whole empire by proportional representation. This assembly is elected for four years. In addition there is a Reichsrat or federal council, consisting of members from each of the states forming the republic. These states are Anhalt, Baden, Bavaria, Bremen, Brunswick, Hamburg, Hesse, Lippe, Lübeck, Mecklenburg-Schwerin, Mecklenburg-Strelitz, Oldenburg, Prussia, Saxony, Schaumburg-Lippe, Thuringia, Waldeck, and Württemberg. All the people of all the states elect the president of the republic for a term of seven years. The constitution provides for a referendum to the people of measures in dispute.

There is no state church, all forms of religion being free and equal. The majority of the people (40,000,000) belong to the Protestant Church; there are some 24,000,000 Roman Catholics. In recent years there has been a slight decrease in the number of Protestants and a slight increase in the Catholics. Jews only number one per cent. of the population; among the wealthy, however, the proportion is much greater, as it is among those also who follow the arts.

EDUCATION. Education is left to each state, but it is almost uniform throughout the entire country. Everywhere it is compulsory between the ages of 6 and 14. The defect of German higher education is its intensity, which accounts for so large a number of the people, even children, requiring spectacles or eyeglasses. But on the commercial and technical sides it has made itself supreme. Classical education is given a secondary place, although scholarship is still cultivated, both in the *Gymnasien* and in the universities; the whole system in the schools above the elementary aims at preparation for professional careers. Great pains are taken to ensure that teachers shall be well qualified for their task.

Effect of Educational System

Germans have a profound belief in the value of education, and keenly desire it. When those who could pass certain examinations were excused part of their military service, it was considered disgraceful in any young man of education that he should not be able to take advantage of this provision. The tendency for education in Germany is, however, towards making all citizens obedient rather than self-reliant. They are accustomed to look to the state for the regulation of many matters which elsewhere are left to individual or local choice. Germany was, for example, the first country to adopt compulsory insurance against sickness, accident, and old age. Bismarck favoured a modified state socialism as a means of keeping the people comfortable, and therefore contented. The result of this was that poor rates were almost unknown. Destitute persons have a claim upon any local union for relief, but the expense of relieving them must be paid by the unions in which they are registered as residents. In the larger towns the *Elberfeld* system is applied, which employs the unpaid services of well-meaning persons for visiting and inquiring into the conditions of those who require help.

German high-roads are good, and usually the secondary roads are well looked after. An inclination to have things done decently and in order, if possible upon a uniform system, is a German characteristic. The railways are managed by the federal government, and serve the needs of travellers well. In the 40 years between 1880 and 1920 they were almost doubled in length; now there are close upon 39,000 miles of them. This increase accompanied the general development of the people. In 1890 they exported goods to the value of £162,000,000 and imported £203,000,000 worth. In 1910 these figures had risen to 382 millions and 465 millions; during the next three years there was a further very rapid increase; the exports stood at 509 millions and the imports at 560 millions.

The Germans believed that the growth of their trade was largely due to their policy of protection; but the chief cause was to be found in their enterprise and energy. Coming into the field when both British and American had to a great extent occupied it, they saw that only hard work and ingenuity could capture markets for their manufactures. Everything possible was done to meet the wishes of possible customers. Catalogues and price lists were always printed in the language of the country to which they were sent, with weights and measures and money to match. Commercial travellers always spoke the language of those among whom they tried to do business, and spoke it well enough usually to be on familiar terms socially with the trading class. In almost every part of the world, therefore, German competition began to be felt by British firms.

National Ambitions

National ambition was fiercely stimulated from the time of the successful war with France and the foundation of the empire. Up to that period the Germans had been easy-going, easily satisfied, romantic in their ideas, more devoted to music and poetry than to material aims. The virus of imperialism injected into their blood by Bismarck brought about a surprising change. Their outlook narrowed, they set themselves designedly to fill the chief place among the nations. An immense effort, of which the ramifications were noticeable in all branches of the national life, especially in education, was made to imbue the entire people from early youth with the desire for aggrandisement, for the spreading of German influence which they called *Kultur*.

All this was the work of Bismarck, who, aided by ambitious soldiers like von Moltke and von Roon, set himself to make the Hohenzollern dynasty of Prussia the most powerful monarchical caste in Europe, and to endow it with an empire that should hold the balance, and therefore the principal share, of European power. From this conception, which Bismarck's genius for unscrupulous statecraft was able to realize, the new rulers of Germany went on to dream of world-power.

Outside Germany proper over one million sq. m. were under the German flag in 1914, most of them in East and South-West Africa and in Cameroons. They had also islands in the Pacific. The total population of the million sq. m. was under 15,000,000, and only an infinitesimal proportion of these were settlers from Germany. Indeed, it was proved that the Germans were not at all inclined to colonise, in spite of the frequent talk about their need for room to expand. They did not like the labours of the pioneer, they did not like loneliness. They would settle in Brazil because there they found German settlements already in being. Those who were induced to go to the colonies, either by persuasion or by the hope of growing rich quickly, returned home as soon as they could. In 1911, for example, 5,050 emigrants arrived in German S.W. Africa, and 4,300 left. The entire white population of all the German acquisitions overseas was only about 25,000, and a good many of these were not Germans. Those who were German belonged mostly to the official class, to the army and to the police, to the railway staffs, and to the clergy.

Colonial Failure

Nor did the colonies prove valuable, as had been hoped, in supplying raw materials for the manufacturers of Germany. They were, in short, a source of expense rather than profit, and would no doubt have been given up if the government could have let them go without thereby admitting that its policy was ill-founded. This would have meant abandoning the strongest argument for the attempt to build a great navy. Their naval effort was justified by the claim to a "place in the sun" of world-empire, which they could not secure, they declared, unless they were prepared to dispute it by force.

CHARACTERISTICS. At all the manoeuvres of their emperor, their politicians, and their diplomatists, the mass of Germans looked on with a feeling of satisfaction,

though few had any clear notion as to what they were all about. But everyone could perceive that their leading men were becoming more important and that these political activities were good for trade. So far as the mass of the people were concerned little change in the national character was to be noticed. They remained a simple-living, home-loving folk, submitting themselves readily to discipline of every kind, enjoying their work, putting all their energies into it, enjoying their pleasures, and not troubling themselves very much about affairs of state, except when they were told that England persisted in standing in their way. The government control of the newspapers made it easily possible to divert national emotion into any desired channel; the general direction given to it was one of hostility to Britain.

Influence of Other Nations

Yet, at the same time, the class which carried on this campaign of propaganda, and had its habits entirely changed by the new prosperity, was ready to copy the manners and customs of the English aristocracy and rich middle class with slavish flattery. The practice of dining in the middle of the day and taking a light supper in the evening was abandoned. Lunch, afternoon tea, and eight o'clock dinner became fashionable. No man who cared about his appearance wore any but English clothes. For some time there had been a disposition to follow the British addition to outdoor games. Football had become popular, lawn tennis was played widely and well. The older kind of German young man, who wore his hair long and his clothes anyhow, who tied a flowing tie and did not mind his linen being grubby, disappeared in all big centres of population; his place was taken by a well-set-up, square-shouldered, clean, and neatly dressed young man of the American type.

The girls changed, too, under the influence of cycling and games; they lost the humiliating subservience to men which had been drilled into their mothers. The modern German wife would not allow her husband to go into and out of a room before her, as her father did, without remonstrance from his obedient and admiring helpmeet; nor would the modern German husband feel comfortable if his wife behaved on all occasions as an inferior being. In these and many other ways the Germans threw off their old isolations and provinciality, emerging into the

stream of general European civilization. They were the more anxious and the more able to do this, since their education always included at least one foreign language; they were in a position, therefore, to know what other people were doing, to measure themselves against French, Americans, British; and to adopt what pleased them in the civilization of each. For the most part this process of self-criticism and selection had good results, though the saying, "You (the British) will always be fools, and we shall never be gentlemen," showed that not all Germans were blind to deep differences of national temperament.

Social Decline

But in some directions the mania for imitating led to very ugly developments. For example, Berlin attempted to take the place of Paris as a pleasure-city. In a very short time its aspect was completely altered. Its old simplicity, its provincial character, gave place to feverish pursuit of excitement. Luxurious restaurants, night entertainments of a hectic and vicious kind, all the machinery for spending money foolishly and quickly, came into existence. Ostentation became the note of the new fashionable society, the moral tone of all ranks dropped, crime became more common, especially crimes of a detestable and even unnatural nature. Many Germans believed that the only remedy for the evils, the only safeguard against national decadence, was war. These were the older families which proudly recalled the triumphs of 1870-71 and believed in the organization of society upon a military basis.

Sometimes the emperor, who, owing to the simplicity of the German mentality, exercised a great deal of personal power, was swayed by these Junker arguments and by the desire of the militarist party for war; more often he dreamed of himself being honoured by posterity for his efforts as "the great peace-emperor" to prevent war. Lacking any stability of character, he was a perpetual puzzle to his subjects, as he was to the rest of the world; the affection they felt for his office and person was tinged with a good deal of quiet amusement at his vagaries and uncertain course. The war drew out both the strength and the weakness of the German nature. All its old effervescent enthusiasm bubbled up at the outset. Even the emperor's appeals to "our old German god," as to a tribal fetish, stirred the great mass of the people. All their old tendency to be soon depressed was noticeable as soon as it became



Germany. Map indicating the industries and natural resources of the republic

clear that the war must be long-drawn-out. Their inclination to do what they were told, to obey words of command, was illustrated by their mechanical reiteration of lies about Belgian atrocities, and about the poor quality of the British army; by their mechanical singing of hymns of hate. When at last they realized how they had been deceived, how their rulers had aroused against themselves almost the entire world, they turned their resentment against them and threw down the structure of trade that had been built up with such hopes of commercial victory.

To those who knew the German nature it was certain that there would be an explosion as soon as the truth was known to them. It came sooner than even they themselves expected. A clean sweep was made of monarchy and militarism, and though the conditions of the Peace Treaty, which seemed hard to them after the declarations of President Wilson and Lloyd George, made a good many look forward to a bloody revenge, yet the mass of the German people took their lesson to heart and renounced altogether the idea of asserting their importance by force of arms.

Now they are returning to the path from which they allowed themselves to be seduced, the path of industry and commerce, in which

they hope to renew the successes of the generation which preceded the war. Freed from the expense of keeping up a vast army and a navy which became every year a greater burden to the taxpayer, they intend, it appears, to concentrate all their efforts upon making their recovery astonish the world as much as that of France did after 1871.

Hamilton Fyfe

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HISTORY. The kingdom of Germany, Deutschland, as the Germans call it, from which the existing republic has developed, dates from the 9th century or thereabouts, the time when the Carolingian empire broke in pieces; but the country, although not then known as Germany, has a history going back a further 3,000 or 4,000 years, or perhaps more.

It is not, however, a history following a single line of development, for Germany was from the first inhabited by different races,

and even when a kingdom it was a federation of semi-independent states rather than a centralized monarchy as England and France became. Other points of interest and difficulty are the connexion of Germany with the Holy Roman Empire, the elective character of its kingship, the process that eventually made Prussia almost synonymous with Germany, and the elimination of Austria from the union of German peoples, finally effected in 1866.

In the paleolithic period man lived in Germany, where the stone and bone implements that he used have been found. In the neolithic age he was spread over a good deal of the country, this being proved by the discovery of his dwellings, his implements, and his graves in various parts of the land. The bronze age saw a marked increase in the civilizing agencies, and soon the people possessed chariots and other weapons, lived in strongly built houses, and knew something of the arts and refinements of life. To this they were helped by a trade with the Mediterranean regions. Such is the evidence of the soil and the spade; written evidence begins with the Romans.

Nearly a century before the opening of the Christian era the Romans invaded Germany. Julius Caesar conquered some of these tribes, and after his day began the

military settlement of the Romans along the valleys of the Rhine and the Danube. After the defeat of Varus by Arminius in A.D. 9, these rivers were regarded as the boundaries of the empire, and consequently their castra or camps were established along or near the two valleys. From these sprang many of the German cities of to-day, for instance Cologne, Mainz, Cleves, Augsburg, Spire, and Worms; therein through the dark ages that followed there lingered traces of Roman civilization and of Christianity.

Now and again, in the early centuries, the Romans moved across from these rivers into Germany, but without achieving any real successes in the interior. Tacitus, in his *Germania*, names a large number of tribes dwelling in Germany, but most of these are names only, and in any case their importance only lasted for a few years, for in a century or two most of them had disappeared from history. They belonged to three main groups, however, Celts, Teutons, and Slavs, although anything approaching exactitude is here impossible. The cardinal fact is that from them the existing German people emerged, and that to-day the predominance of one or the other of these elements is evident in the various parts of the country. For example, there is a strong Slav element in the original kingdom of Prussia, and a strong Celtic one in Bavaria.

Germany and Deutschland

From one of these names came our word Germany. Julius Caesar referred to a group of tribes as Germani, while later Tacitus used it, although for a different group. The latter author perpetuated it, moreover, in his invaluable work, and thus it became the Latin, and later the English, name for the country. The Latin-speaking Germans of the monasteries, however, when their land was part of the Frankish empire, called it Francia, and later, as a single German speech came into existence, the word Deutsch was evolved. From this came Deutschland, although it was not generally used until the 15th century, this delay being due to the inclusion of Germany in the Holy Roman Empire with the sonorous description of its ruler as Imperator Romanorum.

Gradually, as in Britain, the Roman power grew weaker, and in the 3rd and 4th centuries the Romans were compelled to fight hard against the tribes who refused any longer to acknowledge their authority. Among these was the confederation known as the Alamanni, who carried the war on to

Roman soil. From the east came an inrush of Huns, who swept across the land, and then with the appearance of the Franks the history becomes a little clearer.

During these years there had been evidently a great deal of movement among the tribes. Some had disappeared, although this may only have been a change of name, the impression of a conquering upon a conquered people. At all events, from about 600, certain tribes or groups of tribes bearing familiar names appear, and from these a fairly continuous story can be traced.

Kingdom of Clovis

The chief of these tribes were the Franks, the Saxons, and the Bavarians. The Franks settled in both France and Germany, and the state they founded covered a considerable portion of each, which were thus united, a fact which does something to explain the long struggles for the possession of Alsace-Lorraine and the neighbourhood. Under Clovis, who died in 511, they became a kingdom, and this kingdom of the Franks grew into the empire of Charlemagne, the Frankish part of Germany being that lying along the Rhine, while its ruler had a more or less vague authority over other parts. In addition to this kingdom, Germany appears at this time to have been divided into Swabia, Saxony, Thuringia, and Bavaria, with an eastern portion inhabited by Slav tribes, some of whose names are still perpetuated in Pomerania, Brandenburg, and elsewhere.

The kingdom of Clovis became that of the Merovingian kings of the Franks, under whose feeble rule the German tribes conquered by Clovis and his immediate successors became again independent. Then followed the rise of Pippin of Heristal and the Carolingian family. Pippin and Charles Martel recovered the lost authority of the Franks over the Bavarians and the Thuringians, who were included in the great empire of Charlemagne.

Having become the king of the Franks, Charlemagne soon made his rule effectual in western Germany, save only over the Saxons. A war with them was decided upon, and after a struggle lasting for about 30 years they were brought under his authority. He turned his arm also against the Slavs, who for many years had been troubling the eastern part of Germany, fighting successfully against a combination known as the Avars. To his people Charlemagne was great because he gave them what they needed, protection from their enemies.

Under the Carolingians Germany became largely a Christian country.

Christianity had been introduced by the Romans and in the cities had never entirely died out, but it was only when it was accepted by the king that it spread rapidly. Clovis had been converted to Christianity, and in the three centuries after him most of the German monasteries and the older bishoprics were founded. The Englishman who was renamed Boniface was one of many itinerant preachers of the faith, and to their efforts it owed much. Much of the progress made was doubtless superficial, and many of the converts were certainly doing nought but obeying the orders of a king when they were baptized, but the establishment of monasteries and churches, which became centres of learning and the civilizing and humanising agencies that grew up in and around a Christian community, were of incalculable benefit to the people.

Closely associated with this religious movement was the revival of learning. Much has been written about the scholars, Alcuin and others, whom Charlemagne gathered around him, while his love of learning was revealed in other ways. The revival which he encouraged produced a literature, almost wholly monastic, narrow in outlook, but yet of great value for the life of the age. Schools, again solely under ecclesiastical influence, were founded, and in other ways civilization made great strides forward.

Early Characteristics

About the social and economic life of the Germans at this time only generalisations are possible. Without stressing too much the quoted remark of Tacitus about their hatred of town life, it is certain that the vast majority of them lived in the country. Trade, the father of towns, was yet in its infancy, and the nearest approach to a town community was the group of dwellings housing its dependents that sprang up around a rich abbey, the palace of a king, or the seat of a bishop. There were settled the smiths who made and repaired the weapons of war and of hunting, and probably a number of other skilled craftsmen whose work was of a more ornamental kind.

The tilling of the soil and the care of cattle were evidently the main occupations of the people, although much of their food was doubtless the spoil of the chase, for forests abounded, and from them a plentiful supply of wood was obtained. The building and repairing of the dwellings was done by the people themselves. Clothing was provided by domestic labour, while there were some rude industries, such as the making of pottery.

The small communities in which the people lived were largely self-governing. Defence, one of their main considerations, had to be provided for, and there was probably some regular system of dividing the arable lands among the villagers or marksmen. In some way or other they contributed to the revenues of their chief or king; they were liable to be called upon to go and fight for him, and collectively they were responsible for the peace in their village. Force, tempered by custom, was the law under which they lived.

Division of Charlemagne's Empire

Soon after the death of Charlemagne, in 814, his great empire fell to pieces, and in 843 a most important arrangement was made between his grandsons. By a treaty signed at Verdun, the empire was divided, and that part which lay to the east of the Rhine, together with some smaller portions on the west, was given to Louis. Later generations labelled Louis the German, and although his kingdom was known as East France, it was really Germany, and he may fairly be called the first German king. He made Ratisbon his capital, and ruled over a good deal of what is now Germany, while his people had a vague idea that they formed a distinct unit in Europe. In 870 another arrangement between him and his half-brother, Charles the Bald, added much to his kingdom. This gave to France and Germany something like their present mutual frontiers.

Louis died in 876 and his kingdom soon fell to pieces. His son Charles the Fat inherited it as he did most of France proper, but he was unable to defend it from the attacks of the Magyars, another stream of invaders from the east, who had been kept in awe by the name and feats of Charlemagne. He was troubled, too, by the Northmen, or Danes, as the English called them. At length the Germans, eager for security, deposed him, choosing in his stead in 887 a certain Arnulf, an illegitimate son of an earlier king. Von Ranke describes this event, which took place at Tribur in 887, as "the first independent action of the German secular world." Arnulf, however, died a few years later, leaving only a boy to succeed him.

At this time the misery of Germany was extreme. Deep in the German mind was the idea that they had the right and the power to choose their king, and to this old expedient they now turned again. The prelates naturally took the lead, being educated, rich, and influential, and, with some of the secular nobles, they fixed upon Conrad,

a powerful man in Franconia, and in 911 they chose him as king.

By this time feudalism, or something like it, had appeared in Germany. Desiring protection, men had promised, in return therefor, their services to some powerful person in the neighbourhood, thus becoming his vassals. So appeared the beginnings of a hierarchy at the head of which was the king. Some of the reforms introduced by Charlemagne had been in the same direction, but it was in the years of disorder and danger that it made the greatest progress. In the various areas in which the people had the same speech sympathies, there was a tendency to look to one powerful man to lead the movement for defence, and he became the duke. Thus in Franconia, Bavaria, Saxony, Swabia, and Lorraine dukes appeared about this time, and they were sometimes strong enough to stand up to the king. They ruled over the duchies as independent kings, and this age is sometimes known as that of the great duchies.

About the same time, on the frontiers of Germany margraves were appointed to defend the borders or marches, and they too had great powers over the districts under them. Both Austria and Brandenburg, the parent of Prussia, were originally mark districts.

Reign of Otto the Great

Conrad's successor was Henry the Fowler, the first ruler of the Saxon house that supplied Germany with kings until 1024. He was chiefly concerned in looking after Saxony, and left the rulers of the other duchies very much to themselves, but there was a change when his son, Otto the Great, became king. A great man, inheriting certain advantages from his father, he was in reality the ruler of all Germany. It was one of the recurring periods when the barbarians were harassing the land, but Saxony was already safe, and it was near Augsburg, in S. Germany, that he won his great victory over the Magyars. All the duchies passed into his hands, or those of his nominees, and for once Germany had a king to whom there was no possible rival. In 962 he conferred a questionable benefit on the country by securing for himself the title and dignity of Roman emperor. He revived the empire of Charlemagne, and made Italy, and not Germany, the centre of interest for his successors. Otto II, and then Otto III, followed. Each left the Germans very much to themselves; in 1000, like the rest of Christendom, they believed the end of the world to be at hand.

In 1024 Henry II, the last ruler

of the Saxon house, died, and the electors chose as their king a Franconian, called Conrad. He, like Henry the Fowler, was the first of a line, which endured until 1125. The chief event of this century was the struggle over investitures, that culminated in the appearance of Henry IV before Gregory VII, at Canossa, and ended in the concordat of Worms. The main importance of this contest, as far as Germany was concerned, was rather in the stimulus it gave to civil war and disorder. The pope found eager supporters in all those who disliked the rule or person of Henry IV. The Saxons were especially aroused against him, and there was a good deal of fighting in that duchy.

In 1138 there appeared as a candidate for the throne, vacant by the death of Lothair, Conrad of Hohenstaufen. He was elected, although not unanimously, for there was a rival candidate who was strong enough to take up arms, but in the end he prevailed, and his house ruled Germany until 1254. Conrad himself was a man of no great parts, but it was otherwise with his successors, Frederick I, and Frederick II.

Under the Hohenstaufen, the condition of Germany became very bad. It was fairly peaceful during the reign of Frederick I, who realized, as Otto the Great had done, that a king's first duty was to protect his people. He, however, spent German lives and German money freely in Italy, and the end of his reign was marked by the rebellion of his powerful vassal, Henry the Lion, of Saxony. Frederick was still strong enough to drive Henry into exile, and to break up his great duchy, which had been the foremost obstacle to a real royal authority since about 1124. Henry VI and Frederick II cared less for Germany.

Hohenstaufen and Welfs

When Henry died, in 1197, there was a struggle for the vacant throne, the opposing parties each choosing a king, and then taking up arms on his behalf. They were the Hohenstaufen and the Welfs, and the two kings, Philip from the former, and Otto from the latter, fought without a real decision for sixteen years. There was a chance of peace when Otto IV was crushed in 1214, but the ambition of Frederick II renewed the unrest. The quarrel with the pope gave the king's enemies in Germany a powerful weapon of offence, while the faction leaders also made good use, from their own point of view, of the enmity between Frederick and his son.

Frederick II died in 1250, and his surviving son Conrad, beaten and disheartened, soon left Germany to look after itself. Several puppet kings, foreigners such as Richard, earl of Cornwall, were put forward, but none of these had any power, save that of the few soldiers who followed them and their supporters.

One or two characteristics of this period may be mentioned. In the first place, apart from the court and surroundings of the king, there was no central authority. In this fact lay the mischief done by the continual expeditions to Italy. A regent or someone of the kind was left behind, but the machine he controlled was deprived of its principal parts. Thus came a chance for the ambitious among the princes and prelates. Civil wars were inevitable. The barons and their troops plundered wherever they could, causing an immense deal of suffering among the peasantry. Something of the kind happened in England and France, but to nothing like the same extent. Moreover, in those countries the hereditary character of the kingship made for stability.

The early part of this period was marked by the spread of Christianity; the latter by the growth of towns. Otto the Great especially believed in securing the aid of the Church, and about his time many bishoprics and monasteries were founded, mainly, but not solely, in the newly conquered regions. The energies of Christianity were also aroused by the Crusades, in which several German kings and many princes participated.

Trade and Townships

Other causes, the growth of trade being prominent, led to the increase in the number and size of the towns. As in England, kings found that selling privileges to them was an easy way of raising money. The general disorder added to their strength, for their walls were generally able to keep out the marauding bands, and the benefits secured by living therein were increasingly appreciated by the countrymen. Many of them were independent states in all but name, and the eagerness with which kings sought their aid is eloquent of their position at this time.

In general, during these years the size of Germany was being increased. There were set-backs, it is true, as towards the end of the 10th century, but notwithstanding this the gains were considerable. Henry the Fowler began the work of bringing the Slavs over his eastern frontiers into his duchy. Other kings carried on

Wars with Poles, Bohemians, Danes, and others, whose rulers now and again owned themselves as their vassals, but the important fact was not so much this as the steady roll of German influence eastwards. On the borders were watchful and ambitious men, lords of a piece of debatable land, small but capable of indefinite expansion by the sword. One mark district was extended until it became Brandenburg, while another area of expansion was in the south-east, Styria, Carinthia, and thereabouts. In 1250 the Elbe was far from being the boundary river it had been 300 years before.

Rise of the Hapsburgs

Under the conditions prevailing after 1250, it mattered little to the princes whether Germany had a king or not, but the pope was anxious for one, and at his instigation the electors met in 1273 and chose Rudolph of Hapsburg, a count ruling over some land in what is now Switzerland, and one who had made a reputation as a fighter. From this date until 1866, with only one long break, a member of this family was the senior of Germany's rulers, the one with the greatest prestige, though not always with the greatest power. The Hapsburgs were Roman emperors and German kings as long as the empire lasted; and as Austrian emperors were of high consequence in Germany until the events of 1866.

But Rudolph secured something intrinsically more valuable than the throne of a disunited country. The result of some fighting with the king of Bohemia, he took the duchies of Austria, Styria, and Carniola, and by giving these to his sons he began the long association of his family with the duchy that grew into the empire of Austria. When he died in 1298 his son Albert was not elected king, but he made war upon his successful rival, Adolph, who was killed in battle. Albert then secured the throne.

Albert's reign was brief, and when it ended there was another fight, this time between one of his sons, Frederick, and Louis, a member of the Wittelsbach family. The latter soon became the emperor Louis IV, another ruler who spent his strength freely, but without advantage to his country, in a quarrel with the pope. The next emperor, Charles IV, was a son of the king of Bohemia, and to him, also, though for a different reason, Germany was only a secondary consideration. Charles was followed by his son Wenceslaus, who was dethroned by the electors

because he was too idle to attend to his duties, and then came another son, Sigismund. On Sigismund's death in 1437 a Hapsburg was again chosen king, and the election soon became a mere form, a Hapsburg being chosen as a matter of course.

The emperor, however, was by no means the only ruler in Germany, nor was he necessarily its most powerful figure. From one end to the other were states, bewildering in number and of every conceivable size and shape, ruled by counts, marquesses, dukes, and some, not less important, by bishops and abbots. By virtue of the Golden Bull of 1356, which named seven electors, these were winning an exceptional position for themselves, standing out amid the crowd of petty rulers. They were the king of Bohemia, the rulers of the Palatinate, Saxony, and Brandenburg, and the archbishops of Mainz, Cologne, and Treves. With Austria and Bavaria these may be regarded as the chief of the German states, and much of Germany's history is that of their rivalries and growth.

In Germany by this time something like a parliament had developed. Called the Reichstag, it met at the instance of the king in any city in which he was. At first, as in England, the members sat all together, but gradually they became divided into three houses, the college of electors, the college of princes, i.e. all the rulers save the electors, and the college of free cities.

The Hanseatic League

Two other movements should be mentioned—the Teutonic Order and the Hanseatic League. The knights of the former, the crusades being over and their occupation gone, accepted an invitation from the bishop of Prussia to help him to conquer the heathen Prussians. This the soldier monks did and the country, roughly the district now known as East Prussia, became the possession of the order, its ruler being the grand master. German immigrants settled in the land, and towns were built therein.

The Hanseatic League arose from an association of German towns for mutual protection. There were a number of small alliances, which the conditions of the time almost compelled, but this one became unique as a trading confederation. It had its own fleet, and was strong enough to fight, as it did against Denmark for instance, but its main activities were commercial. It was independent of any German authority, save that the free cities owed a certain allegiance to the king, and

so was in practice a state within a state—*imperium in imperio*.

The long reign of Frederick III came to an end with the close of the Middle Ages. The central authority was feeble than ever, while the Hohenzollerns in Brandenburg, the Wittelsbachs in the Palatinate and in Bavaria, and other rulers were making their states much larger and stronger.

The Renaissance and Reformation

The Renaissance and the Reformation, the movements that mark the end of the Middle Ages, had profound results in Germany. Maximilian, who became king in 1493, was a prince of the Renaissance type. Of his many activities, one was an attempt to improve the government of Germany as a whole. He divided the land into circles, each responsible for the maintenance of order within its own area, and this arrangement lasted, but in the larger sense his plans ended in failure, the vested interests being too strong for him.

Maximilian's failure compelled his successors to rely more, when force was needed, upon Austria, where their rule was effective, rather than upon the princes of Germany, who had axes of their own to grind, when troubles with foreign nations, especially France, arose. To make this separatist spirit more pronounced came the Reformation, with the cleavage of opinion that made Germany the most divided of all European states. Charles V was the most powerful ruler that Germany had seen since Charlemagne, but that was because he ruled over Spain and Spanish America, and was in close alliance with his brother Ferdinand, who owed to him the archduchy of Austria. The support which the princes gave him, both in his wars with France and in his efforts to settle the religious difficulties, was fitful indeed. The treachery of one of them, Maurice of Saxony, was sufficient to make this powerful potentate a prisoner.

The formation of a definite party, the Protestants, among princes and people, was followed by an outbreak of the peasantry, not in the main a religious movement. Many attempts were made to end the general unrest that continued after the peasants had been crushed, and a certain amount of success attended the religious peace of Augsburg, 1555. This adopted the principle that the religion of the prince must be the religion of the land. Numerically, towards the end of the 17th century, the Protestants were superior to the Roman Catholics. Not only were the former dominant in most

of the north, but they had a strong following in the rich cities of the south-west. Its two sections, however, were as bitterly opposed to each other as they were to the Roman Catholics. The Calvinists had no share in the benefits of the peace of Augsburg.

The Thirty Years' War was the inevitable outcome of the religious troubles. Charles V, and after him his brother Ferdinand and the latter's son Maximilian II, had made efforts to compose the religious and allied differences, but after a time the rulers began to display a less conciliatory spirit towards the Protestants. The counter-reformation began its work, and the Roman Church won back much that it had lost.

But something must be put down to a more material cause. One of the questions of the day concerned the ownership of the extensive lands that had belonged to the Church. Many of them had been seized by the Protestants, and about their possession strife was continuous, for the Roman Catholics demanded restoration. At length the year 1552 was selected as the dividing line; all that was then in Protestant hands was to remain so, all seized after then was to be returned.

Edict of Restitution

Just after the Thirty Years' War began Ferdinand II became emperor. This selection was the result of a family conclave. Young and vigorous, he was a contrast to his predecessors, Rudolph II and Matthias, while his training had made him anxious to crush rather than conciliate the Protestants. In 1629, flushed with victory, which, however, was only temporary, he issued the edict of restitution. This was intended to recover for the Church lands which she had lost through their rulers becoming Protestants, for a number of prelates had adopted the newer faith and, retaining everything, had simply been transformed from ecclesiastical into secular rulers.

The war lasted until 1648, by which time Germany had become a battlefield for nearly all the nations of Europe. It had been stripped bare by foreign soldiers; many towns had been plundered, and numberless villages had been destroyed; the population had been reduced probably by one half.

Between the peace of Westphalia of 1648 and the Napoleonic upheaval Germany was less of a united state than ever. The treaty granted toleration to the Calvinists equally with Roman Catholics and Lutherans, and so made peace on

this matter possible. But in another direction its results were less beneficial. The princes were free from now to form alliances with foreign powers, their states, especially the larger ones, thus becoming to all intents and purposes independent. The history of Germany becomes more than ever that of its parts.

The Wars with France

Internally, the cardinal fact of German history during the 17th and 18th centuries was the rise of Prussia; externally it was the series of wars against France. The latter began with the reign of Louis XIV, whose policy of enlarging France was made easier by the existence of Germany as a loose confederation of states. He persuaded or bribed some of the princes to fight for him, the visible results of his earlier wars being the acquisition of Alsace and Lorraine. The emperor did what he could in their defence, but he had two frontiers to protect, while the only force he could get came from his own Austria and from such princes as chose to help him.

This was even truer of the wars that opened with the accession of William III to the English throne in 1688 and ended with the treaty of Utrecht in 1714. France secured help from Bavaria, while the resistance to her policy came mainly from Austria and Britain.

The dominant figure in 18th century Germany is Frederick the Great. Steadily Prussia had emerged from the mark state of Brandenburg to one of the powers of Europe. In 1648, or soon afterwards, all Pomerania had been added, there were other acquisitions, and a century later Silesia was seized. Germany was divided into two armed camps, one supporting Prussia and the other Austria, and the contest between the two, ended temporarily in 1748, was fought out again in the Seven Years' War. Later there was some trouble about the succession to Bavaria, where the ruling family became extinct in 1777. This, however, passed to another branch of the Wittelsbach family, thus uniting the Palatinate with Bavaria.

The Revolutionary Wars

In 1789 the French Revolution began, and soon Austria, Prussia, and most of the other German states were drawn into the war against France. In the same period the two chief German countries were with Russia making an end, in their own interests, of Poland. In 1795 Prussia was compelled to give up her possessions on the left bank of the Rhine to France, and to withdraw from the war, but it

was continued by one or other, with Germany as the chief battleground.

In 1806 the emperor Francis II resigned the imperial crown, and the Holy Roman Empire came to an end. Germany was now in theory, what she had long been in practice, a geographical expression, while her master, one who carved her into pieces as he liked, was Bonaparte. In 1806 the Prussians were beaten at Jena, and in the years following a new spirit arose in that country, and to some extent in other parts of Germany. It resulted in a rising, the war of liberation, against Napoleon, and his final defeat at Waterloo.

Napoleon, in 1806, had formed a confederation of German states, the confederation of the Rhine, but a more lasting one came into being at the peace of 1814. This sealed and stamped a territorial revolution of the first magnitude, for the Germany of the Middle Ages, with its prince-bishops and the like, had finally disappeared. Most of the 300 states had vanished, so the boundaries of the others were altered beyond all recognition. Only 39 remained, and these formed the new German Confederation, or Bund. Austria and Prussia were its chief members; among the others were the kings of Bavaria, Hanover, Saxony, and Württemberg.

The history of the next fifty years is mainly a struggle for constitutional liberty. Several of the states had a landtag, or other assembly of nobles and prelates, but there was nothing in the way of representative institutions, nor had any government any idea of its responsibility to the people in the modern sense. The rulers fought hard against this movement, but it was too strong to be crushed. Saxe-Weimar leading the way, several rulers granted constitutions to their people.

The Frankfurt Parliament

Another movement of the time was towards uniformity in commercial matters. Trade could never flourish in a country where import duties varied with each state, and where every few miles a new boundary with the inevitable custom house appeared. The first attempts led to the formation of three distinct trading areas, but soon these were united into the Zollverein of 1834. Austria stood outside this, making Prussian dominance easier. In 1848, as there had been to a lesser extent in 1830, there were revolutions throughout Germany. The passion for union was by no means satisfied with the association of 1814, and consequently a powerful

agitation compelled the Bundestag to agree to the meeting of a national parliament at Frankfurt. The members, who were elected by a wide franchise, met to draw up a constitution for a united Germany. Having decided to have an emperor, the honour was offered to the king of Prussia, but he declined it, and as far as immediate results went the Frankfurt parliament was a failure.

The duel between Austria and Prussia for the headship of Germany was now entering upon its final stage. In 1849 Prussia managed to form a union, but here she met with a rebuff; troubles in Hesse led to the entrance of Austrian and Prussian troops, called in by conflicting authorities. War seemed inevitable, but at the decisive moment Prussia gave way, and among other things the new union was dissolved. The terms of Austria's diplomatic victory were in the convention of Olmütz, and the Bund received new life.

Annexation of Slesvig-Holstein

Other attempts at a union followed, but meanwhile the Slesvig-Holstein question had dominated German politics. The war of 1850 against Denmark was waged nominally by the Bund, but in reality by Prussia, aided by some of the other states. This soon came to an end, but diplomacy continued its efforts at a settlement. In 1863, this not having been reached, the Bund again interfered; this time Saxony and Hanover took the lead, Prussia and Austria disapproving of their action. The two latter powers, however, fearing for their prestige, announced their intention of acting as independent states, invaded Denmark, crushed the Danes, and took over Slesvig and Holstein.

This action led to the inevitable war. Austria wanted the Bundestag to decide the future of the captured duchies, but, refusing to agree, Prussia suggested instead a drastic reform of the confederation, from which Austria should be excluded. Both presented their suggestions to the federal diet, which accepted that of Austria. War was at once declared by Prussia, and in a few weeks Austria was totally crushed at Sadowa. The majority of the German states, including Hanover, Saxony, and Bavaria, shared this humiliation, for they had fought against Prussia. The war ended the connexion of Austria with the other states of Germany and led to other changes, mainly in the direction of increasing Prussia's power and size. A new union was set up, called the North German Confederation; its

head was the king of Prussia, and it included all the states N. of the Main.

The final step in the union of Germany followed the Franco-Prussian War. The Prussian army, this time aided, not opposed, by those of Bavaria and the other German states, again proved its prowess. In Jan., 1871, the North German Confederation gave way to the German empire, or Reich, with William I of Prussia as its first emperor. To this was given the federal constitution which, except for the disappearance of the emperor, it retained in the main after the revolution of 1918. The Reich consisted of 26 states, although one of these, Alsace-Lorraine, was not given equal privileges with the others. Save it, all were represented in the Bundestag, while the people sent their representatives to the Reichstag, but the affairs of the empire were mainly controlled by Prussia.

Policy of William II

The history of Germany from 1871 to 1914 was first a policy, that of Bismarck, of unifying the country on the Prussian model, and later that of William II, one of ambitious plans of world dominion that led to war. Under Bismarck a supreme court of justice was set up at Leipzig, and a common monetary system was established. Education was organized on Prussian lines, while under her control came most of the armies and the railways of the other German states.

William I died in 1888, and Bismarck resigned in 1890. William II had his chancellors, but he took a large share himself in the work of government. Socialism made great strides; for instance, at the general election of 1912 that party polled more votes than any other. More remarkable was the industrial progress of Germany.

The exact share of the emperor and his advisers in bringing on the war in July, 1914, is perhaps doubtful, but it is certain that the German people heartily supported it, and that they believed they would win. They fought well and endured well, although the peace proposals put forward in Dec., 1916, were a sign of something wrong. In Jan., 1918, there were risings in Hamburg, Munich, and elsewhere, but the collapse did not come until Oct. There was a revolution, almost bloodless; on Nov. 9 the emperor abdicated, and soon a republic was proclaimed. The other German rulers followed his example; Germany became a federation of republics. See N.V.

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THE OCCUPATION. Under the armistice the German armies were to evacuate within 14 days Belgium, France, Alsace-Lorraine, and Allied and U.S. forces were to occupy these districts. It was further agreed that the countries on the left bank of the Rhine were to be evacuated within 31 days by the German armies and administered by the local authorities under control of the Allies and the U.S. armies of occupation. The latter were to carry out this occupation by holding the principal crossings of the Rhine (Mainz, Coblenz, Cologne) together with bridgeheads at these points of a 19 mile radius on the right bank, and by garrisons holding the strategic points of the regions.

Distribution of Allied Armies

The general Allied advance to the Rhine began on Sunday, Nov. 17, 1918. The Belgian army took up its position between the Belgian frontier and the Rhine, from Emmerich to Düsseldorf. Next to the Belgians were the British, whose line extended to beyond Bonn, and included Cologne. The first cavalry patrol reached Cologne on Dec. 6. On the right of the British were the American troops who occupied the bridgehead of Coblenz and the district of Trèves. On the right of them were the French, whose zone extended to the Swiss frontier.

The armies of occupation had little to do, as, for the most part, the German population remained peaceful. The only critical period was in May, 1919, when, following the German refusal to accept the peace terms, the whole force prepared to march further into Germany, but the appointment of new German peace delegates removed the necessity. For a time in 1920 French troops occupied Frankfurt to put down disorders.

An important agreement between the Allies and Germany with regard to the military occupation of the territories of the Rhine was signed in July, 1919. By it an Inter-allied Rhineland high commission was established with power to issue ordinances, having the force of law and recognized by all the Allied and Associated military authorities, and by the German civil authorities. By the agreement the commission was given the power to declare a state of siege in any part of the territory, or in the whole of it. It was further agreed that if, before the end of the 15 years, Germany had fulfilled all her obligations under the treaty, the troops of occupation would be immediately withdrawn.

The British army of occupation was commanded first by Sir W.

Robertson, and later by Sir T. Morland and Sir A. J. Godley. The French army of occupation was commanded first by Gen. Mangin and later by Gen. Degoutte. In Jan., 1923, French troops occupied the Ruhr owing to Germany's failure to pay reparations. See *Reparations: Ruhr*.

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LANGUAGE. The language spoken by the greater part of the inhabitants of the former German Empire, and by the Germans of Austria and Switzerland, is known as High German, and forms a branch of the Germanic, or Teutonic, family of Indo-European languages. The separation of High German, that is to say, the speech of the "high" lands of the S. from the parent stock, probably took place in the 7th century, and was marked by a change in the consonantal system, known as soundshifting, or, in English, as Grimm's Law (*q.v.*). This change is exemplified by the consonants in such cognate words as the English *ten*, German *zehn*; English *do*, German *tun*.

Upper German Dialects

The first period of the development of High German, known as Old High German, lasted from approximately 600 to 1050. The principal dialects were Upper German, divided into two main dialects (1) Bavarian, which includes German Austrian, E. of the river Lech; (2) Alemannic, including Swabian, Alsatian, and Swiss, W. of that boundary, and Upper Franconian to the N. The line of demarcation between High German and Low German runs approximately from Maestricht to Düsseldorf, then, after a slight curve to the S., through Minden, Magdeburg, Wittenberg, Lübben, and Fürstenberg. Low German includes Lower Franconian, which developed into modern Dutch and Flemish, and

the Saxon dialects (Westphalian, Low Saxon, etc.); these continue to exist in the form of various so-called Plattdeutsch dialects.

Old High German is a richly inflected speech with full endings, and a wide range of vowel sounds. In the course of the 11th century, this dialect gave place to Middle High German. The flexional endings were reduced to a more or less uniform e-sound (*e.g.* the declension of the plural of the word for "day" is in Old High German: *nom.* and *acc. taga*; *gen. tago*; *dat. tagum*; in Middle High German, *tage, tage, tagen*); and the general simplification of the language brought with it a syntax to a greater extent dependent on word-position.

Middle High German

Middle High German was the language of Germany from the 11th to well into the 15th century. Besides the two chief dialects of the south, Bavarian and Alemannic, it comprised the central German dialects of Upper and Middle Franconian, Thuringian, Upper Saxon, and Silesian. Middle High German passed gradually into New High German or Modern German, the principal changes which mark the transition being a lengthening of short vowels in open positions, *e.g.* *grāp* to *Grāb* (the vowel being open in the *gen. Grabes*); *lēben* to *leben*; a reduction of certain diphthongs to monophthongs, as *guot* to *gut*; *dienen* to *dienen* (ie pronounced ee); also the reversal of the process in *zit* to *zeit*, *mūs* to *Maus*, *hiute* (where it is pronounced like modern *ü*) to *heute*.

Uniformity in High German speech was brought about by three factors: the union of the German states under the medieval empire, which necessitated a generally understood language for government purposes, the invention of printing, which made it desirable that books should appeal to as wide a public as possible; and, most important of all, the influence of Luther's Bible, which was translated into a carefully selected language representing a compromise between N. and S. Thus the spread of a uniform literary High German language was largely dependent on the spread of the Reformation itself. In the 17th century, High German deteriorated

A a B b C c D d E e F f G g H h I i J j K k L l M m

N n O o P p Q q R r S s T t U u V v W w X x Y y Z z

German Language. Script forms of the 26 characters in the German alphabet, the capitals and small letters side by side

seriously, owing to the promiscuous introduction of foreign words, against which powerful linguistic societies long fought in vain; it was not until the latter half of the 18th century that the language became worthy of a classic literature.

While the German language has changed little since the time of Goethe and Schiller, German style has undergone considerable development in the direction of flexibility and clearness; and successive legislation in the German-speaking states has brought about a uniform system of orthography. An effort has also been made throughout Germany, Austria, and Switzerland to maintain the purity and uniformity of German pronunciation by means of a fixed standard in the language of the stage. The claims of the dialects for serious recognition, however, make themselves still heard, not merely in the N., but also in the southern states, especially in Bavaria and Austria.

LITERATURE. The literature of the earliest or Old High German period calls for little comment, its interest being mainly linguistic. The chief monuments are a gospel-harmony in verse by Otfrid of Weissenburg, a ballad, *Das Ludwigslied*, and voluminous glosses and translations by Notker Labeo, a monk of St. Gall; indeed, the most interesting documents of the 9th century are not High, but Low German—namely, the fragmentary alliterative ballad, *Das Hildebrandslied*, and an old Saxon epic of the Life of Christ, *Der Heliant*, or *The Saviour*. In the 10th century, under the Saxon emperors, the vernacular fell into disfavour, and such literature as there was, the Lay of Waltharius, *Rudlieb*, a forerunner of medieval romance, *Ecbasis captivi*, an early form of the Beast saga, and the plays of Roswitha, a nun of Gandersheim, were written in Latin.

French Influence

In the 11th century, when the Middle High German period opens, literature, hampered by the ascetic spirit of the Church, made at first slow progress; but French influence soon found its way across the Rhine. Before the 12th century was half over the Germans were acquainted with the Song of Roland, the epic of Tristan, and had themselves, under Provençal stimulus, begun to cultivate a lyric poetry or Minnesang, of wonderful freshness and purity. By the end of the 12th century Middle High German poetry had reached its zenith. In the courtly epic, Heinrich von Veldeke, author of the *Eneit*, had given place to Hart-

mann von Aue, Wolfram von Eschenbach, and Gottfried von Strassburg. To the first two owe versions of the French romances of Erec and Iwein, the legend of Gregorius, and that most charming of Middle High German idylls, *Der arme Heinrich*; to Wolfram a German romance of Parzival which transcends all others in mystic depth and romantic suggestiveness, and to Gottfried a German Tristan which gives rein to the emotional paganism of the Middle Ages.

More peculiarly German is the great epic *Das Nibelungenlied*—not unworthily described as the German *Iliad*—which unrolls with relentless tragic power the story of Siegfried's death and Kriemhild's revenge. Another epic, *Gudrun*, more loosely constructed but of gentler beauty, deals with sagas of the North Sea; others, of varying merit, constitute the so-called *Heldenbuch*.

Literature in the Middle Ages

The glory of Middle High German literature is Walther von der Vogelweide, the greatest lyric poet of the Middle Ages. Walther's strength lies not solely in the unrivalled beauty of his love songs, but in the width of his range; he is not merely a minnesinger, but also a political poet. All this remarkable outburst of poetry dates from the last years of the 12th and the first two decades of the 13th centuries. Thereafter Middle High German literature fell into diffuse imitation and degenerated rapidly. Of the later poets, Konrad von Würzburg, who cultivated the epic, and Neidhart von Reuenthal, a lyric poet, are the most eminent.

A period of confused and ineffectual literary effort now set in, in which old forms and new ideas jostled together. On the one hand the Germans gave themselves up to mysticism and allegory; on the other they imitated the incisive and witty literature of the humanists, from whom they also learned the art of translation. But there is little originality until the end of the 15th century, when two outstanding works appeared, *Das Narrenschiff*, by Sebastian Brandt, which foreshadowed the coming Reformation, and the Low German beast epic, *Reynke de Vos* or *Reynard the Fox*. The 16th century is the century of the Reformation. Martin Luther himself is its chief man of letters; his translation of the Bible is the greatest German book of the century, and his hymns are its most characteristic lyric expression. Under his influence the drama sprang into new life; at first restricting itself to Biblical themes, but later drawing freely

on the wealth of story liberated by the Renaissance. A typical German dramatist of the 16th century is Hans Sachs, the cobbler of Nuremberg, who especially excelled in the comic *Fastnachtspiele* or Shrovetide plays; and in his hands also the *Meistergesang* flourished, a form of poetry which took the place of the medieval Minnesang. The 16th century was also the great age of German *Volkslied*.

17th and 18th Centuries

Besides the drama, the most virile form of literature was satire, which with the grim Catholic monk, Thomas Murner, attained a fierceness and brutality without example in any other period. Later in the century Johann Fischart, an Alsatian, led German prose into lines of Rabelaisian extravagance, without an adequate substitute for Rabelais' humour. The promise of the 16th century was not fulfilled, for in the 17th Germany was devastated by the Thirty Years' War. Literature fell almost exclusively into the hands of learned poets like Martin Opitz, Paul Fleming, Simon Dach, and Andreas Gryphius, who sought to impose on the Germans a rule-bound literature on strictly classic lines. The literary spirit of the nation is to be found not here, but in its religious poetry, above all, in the hymns of Paul Gerhardt, and in Grimmelshausen's romance *Simplicissimus*, which held the mirror up to the long war with relentless realism. The peace of Westphalia (1648) left Germany exhausted, and the literature of the later 17th century consists mainly in imitations of the French gallant novel, and in bombastic verse which reduces to absurdity the "preciosity" of Marini and Guarini.

At the opening of the 18th century an endeavour to introduce a classic taste in accordance with the tenets of Boileau was apparent. The chief representative of this movement was J. C. Gottsched, the literary dictator of Leipzig, whose *Kritische Dichtkunst* appeared in 1730. But this pseudo-classicism soon found itself in conflict with new doctrines more in harmony with nature, which had found their way to Germany from England. With the conflict in 1740 between the champions of these ideas, the Swiss critics, J. J. Bodmer and J. J. Breitinger, and Gottsched, the new era may be said to open. C. F. Gellert, who won great popularity with fables in the style of La Fontaine, introduced the *comédie larmoyante* from France and the Richardsonian novel from England, and, in 1748, F. G. Klopstock published the first cantos of

Der Messias, a religious epic inspired by Milton. Even more significant was Klopstock's lyric poetry, which broke the fetters that had so long hampered the German lyric.

Meanwhile, in S. Germany, C. M. Wieland contributed to the liberation of German letters with poetry in the spirit of Ariosto, with psychological fiction and a translation of Shakespeare; while another and greater writer, G. E. Lessing, inaugurated the classic age in German literature. With his *Miss Sara Sampson*, Lessing introduced into Germany the tragedy of common life, with Emilia Galotti he perfected this type of drama, and with *Minna von Barnhelm* he gave Germany's 18th century literature its greatest comedy. As a critic, Lessing stands in the first rank.

Influence of Lessing

His *Laokoon*, which prescribes the boundaries between plastic art and poetry, and his *Hamburgische Dramaturgie*, which interprets the modern drama by the light of Aristotle, were text-books which profoundly influenced subsequent developments in Germany and in Europe. Lessing's later years were overshadowed by his battle for tolerance and enlightenment with the Lutheran clergy, a conflict which left an enduring monument in the drama *Nathan der Weise*.

Before Lessing's career had reached its close another movement, the so-called Sturm und Drang or Storm and Stress, had broken over Germany, which was immediately inspired by Rousseau and continued the emancipatory work begun by Klopstock. Its pioneer was J. G. Herder, a thinker of prophetically modern sympathies, and at his hands J. W. von Goethe was initiated into the new ideas. Goethe's *Götz von Berlichingen* and Werthers *Leiden* were the chief works of the Sturm und Drang. A young of gifted, if unbalanced, young dramatists gathered round Goethe, J. M. R. Lenz, F. M. Klinger, H. L. Wagner; and in 1781 J. F. Schiller made his debut with his tragedy, *Die Räuber*, to which were added a few years later *Fiesco* and *Kabale und Liebe*.

The culminating phase of 18th century classicism is symbolised by the close friendship of the two leading poets in Weimar between 1794 and Schiller's death in 1805. In these years Schiller wrote his ballads and his magnificent series of dramas from *Wallenstein* to *Wilhelm Tell*; Goethe published *Wilhelm Meisters Lehrjahre* and *Hermann und Dorothea*, while the first part of *Faust* followed in 1808. The minor literature of the time

reflects more or less faithfully the return to classicism, although in the popular stage plays, notably by Iffland, Schröder, and Kotzebue, and in the novels of J. P. F. Richter, the old Sturm und Drang spirit is still in evidence.

Goethe, who died in 1832, was the acknowledged head of this literature, his chief contributions to it after 1808 being, in lyric poetry, *Der Westöstliche Divan*; in fiction, *Die Wahlverwandtschaften* and *Wilhelm Meisters Wanderjahre*, to which may be added his autobiography, *Dichtung und Wahrheit*, and in the drama, the second part of *Faust*. But in this period the dominating force in German literature was not classicism but romanticism. The Romantic Movement falls into four clearly marked phases: the first is that of the so-called Romantic School, founded in 1798 and led by J. L. Tieck, Novalis, and the brothers Schlegel; the second, which is associated with Heidelberg, encouraged, under the leadership of L. A. von Arnim and C. Brentano, the study of the Middle Ages and of the literature of the people; a third phase, to which belonged the lyric poets J. von Eichendorff, A. von Chamisso, and W. Müller, had its centre in Berlin, and effectually broadened the basis of romanticism; a final period of romantic decay includes the morbid supernaturalism of E. T. A. Hoffmann and the Orientalism of F. Rückert.

Heine and His School

To the last phase of romanticism belongs one poet of supreme genius, Heinrich Heine; but Heine at an early stage declared his sympathies with the school of "Young Germany." This school, whose leaders were, besides Heine, Ludwig Börne and Karl Gutzkow, was essentially anti-romantic; under its protection journalism encroached on literature, and political idea took the place of poetic sentiment. The Young German lyric reflected the revolutionary spirit between 1830 and 1848; its novel, as represented by Gutzkow and later by F. Spielhagen, G. Freytag, and the Plattdeutsch writer, F. Reuter, busied itself with social problems. Meanwhile the Germans were also cultivating assiduously the short story: B. Auerbach with his *Schwarzwälder Dorfgeschichten*, T. Storm with his tales of romantic retrospect, Paul Heyse with his finely chiselled style and Italian sympathies, and the two Swiss masters of fiction, G. Keller and C. F. Meyer, have won for the German short story a high place in European fiction.

Although to a large extent over-

shadowed by Schiller, the German drama struck out, under romantic influence, into new paths, the chief representatives being H. von Kleist in Prussia, and F. Grillparzer, the national dramatic poet of Austria. To the post-romantic epoch belong O. Ludwig and F. Hebbel, the latter one of the most original dramatic poets of the 19th century. After the revolution of 1848 German literature, like German political life, passed into a period of comparative stagnation; but just in these years German scholarship, and especially German historical study, the latter under the leadership of L. von Ranke, were extraordinarily productive. The most interesting literary work emanated from a group of writers in Munich, and with Munich also was associated Richard Wagner, whose music dramas helped to revive an interest in theatre and drama.

As the century drew to its close the Germans, always sensitive to outside influences, absorbed the literary ideas in vogue in France, Russia, and Scandinavia, and under this stimulus cultivated the naturalistic novel and the drama of *milieu*. The greater success was attained by the drama, whose chief representatives were H. Sudermann and G. Hauptmann; while in lyric poetry men like D. von Liliencron and R. Dehmel, in the epic, the Swiss, C. Spitteler, broke effectively with the old Romantic tradition. The outstanding personality of the last epoch was F. Nietzsche, who was not merely a thinker of powerful originality, but also a lyric poet of genius. It has been claimed, no doubt with some justice, that his ideas, working on immature minds, helped to precipitate the catastrophe of 1914; but the baneful influences were more apparent in political and historical writers like H. Treitschke. However this may be, the literary movement, which opened with such promise in the 'eighties, had failed to justify its promise before the outbreak of the Great War.

J. G. Robertson

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ART. Though Teutonic art in its origin and for long afterwards lacked both spontaneity and volume, the earliest artists were nevertheless also the greatest. The art instinct of the people went out, copiously and gloriously, towards the material and tangible, and in the design of cathedrals, town halls, and private houses, and the carving of wood and stone, showed consummate skill. But the opulent burgo-masters and merchants, by no means averse from pomp and ostentation, had neither the knowledge nor the taste to encourage painters, who had to look for patronage in the main to the Church, as at Cologne, and to the wise munificence of an occasional emperor. Purely native effort soon spent itself and the painters, to some extent distrustful of themselves, had the sense willingly to submit to the formative influence of foreign schools, first of the Netherlands, next of Venice and Italy, and then (in our own day) of France.

In the beginning their work was violent in colour and faulty in drawing, while their composition tended towards exaggeration and anti-climax and their realism was apt to be overdone and coarse. In portraits and single figures and limited groups they were quick to seize character, but regarded strength rather than beauty, and the dominant note was marked individuality. The men of genius were rare and their achievement but served to illuminate the comparative sterility of their fellows. Indeed, it is significant that, throughout the period ending with Adam Elsheimer (1578-1628), when Italian influence became predominant for a century, only two names can be said to be household words, Albert Dürer and Hans Holbein the Younger.

Dürer and Holbein

Dürer was a man of almost as universal accomplishment as was Leonardo da Vinci, though he missed the latter's suavity, refinement, and sense of colour. Still, his portraits of himself (Munich Gallery) and Hieronymus Holzschuer (Berlin Museum) are marvels of technique, while his drawings for wood and metal are the theme of undiminished admiration. Holbein's power ran on more gracious lines and has been preserved in such pictures as the Madonna painted for Jacob Meyer, burgo-master of Basel (Grand Ducal Palace, Darmstadt), and his portraits of George Gize, a merchant of the London Steelyard (Berlin Museum), and of Christina Sforza, Duchess of Milan, which was purchased in 1909 for £72,000 and presented to the

nation (National Gallery, London) by the National Art Collections Fund. To these it will suffice to add the Madonna with the Violet, by Stephen Lochner (c. 1400-1450), the first truly tender and charming figure painted in Germany (Archiepiscopal Museum, Cologne), and the Holy Family at the Fountain (Berlin Museum), by Albert Altdorfer (c. 1480-1538), greatest of the "Little Masters." Where the sculptors were many and distinguished it is not easy and may be unfair to particularise, but the work of Adam Kraft (c. 1455-1507) and Peter Vischer (1455-1529) may be mentioned as of exceptional prominence.

Influence of Classic Art

Italian influence—the influence of an Italy, too, whose prime was past—was established early in the 17th century. The incompatibility of the southern and northern temperament foredoomed their projected union to failure, but another and overwhelming disaster befell German art, which was paralysed for generations by the ruin, misery, and demoralisation consequent on the Thirty Years' War (1618-48) and the Seven Years' War (1756-63).

However, in spite of the appalling results of the political turmoil and dynastic squabbles, the friends of the Italo-Teutonic alliance maintained their foolish advocacy. John James Winckelmann's laudation of the art of the ancients (1764) was so far mischievous that it led to blind faith in the classical as art's be-all and end-all, and those who—like Asmus Carstens (1754-98) and Anthony Raphael Mengs (1728-79)—espoused his teaching diverted German artists from thoughts of the present and, more especially, the future. Lessing continued the parable, and landscape and genre were for a time despised. Beauty was everything, Nature nothing. Even Goethe joined the reactionaries. "Art," he said, "had been written in Greek, not in German."

But to all save its devotees classicism was as sawdust. It suffered a natural death, giving place to the monkery and asceticism of the Nazarenes—a nickname of reproach which they proudly adopted as a happy designation of their coterie—whose prophet was William Henry Wackenroder (1773-98), whose cult was that of the Madonna, and to whom a picture-gallery was as a temple of Christian worship, the very gate of Heaven. The leading exponents of their art creed were Peter Cornelius, Frederick Overbeck, William Schadow, Philip Veit, Julius Schnorr, and Edward Steinel.

They gave themselves away as artists when they relinquished drawing from the model as an injury to idealism and from the nude as a menace to modesty. For the rest, the art-loving public grew weary of anaemic scriptural pictures and didactic or namby-pamby anecdotes—excellent in design, but poor in colour and wholly destitute of vigour—and with avidity went after the strange gods to the west of the Rhine. Nor did the Romanticists, who sought inspiration from the Old Testament, Shakespeare and the poets, fare better. The promise that underlay the monumentalism of Alfred Rethel (1816-59), who had studied at Düsseldorf, was cut short by madness, and though Moritz Schwind (1804-71) got more out of legend and fairy tale, which he saw with the eye of a modern, than all the other Romanticists combined, that way salvation did not lie.

If the art of sentimental Germany lacked essential truth because it was non-human, the art of the Germany of blood and iron, by which it was succeeded, developed remarkable technical qualities, and several painters of the first rank, who had the courage to rend the shackles which had bound their fathers and colleagues, frankly went to the *ateliers* of Paris for what the Frenchmen could teach and they learn. Concerning the Exposition of 1855 Edmond About had said truly and wittily, "If you meet with a good German painter you can compliment him in French."

20th Century Portraiture

Among the men who led the anti-sentimental revolution were Anselm Feuerbach (1828-80), Charles Piloty (1826-86), whose technique was rendered the more conspicuous by a feeling for colour which his compatriots of the preceding generation had disdained, and Gabriel Max (b. 1840), whose pictures possess a personal handling that removes them somewhat from the school with which nationality associates him. But Adolph Menzel (1815-1905), own brother to the French Meissonier, was the painter of most distinctive force and versatility, who owed least to anyone, who was virtually self-taught, and shone equally in colour and black-and-white.

In modern portraiture, which is the measure of the greatest in figure painting, Francis Lenbach (1836-1904) proved that he could hold his own with the ablest, whether of the 17th or the 19th century. Of the realists, none has a better claim to mention than the greatest painter modern Germany

has produced, William Leibl (1844-1900), whose *joie de peindre* recalls the most zealous of the Dutch artists. There are others, more or less unrelated, whose performance has already demonstrated that they are capable of founding a German school not unworthy of the 20th century. Among such may be named Eduard von Gebhardt (b. 1838), Hans Thoma (b. 1839), Max Liebermann (b. 1847), Fritz von Uhde (1848-1911), Max Klinger (b. 1857), and Franz Stuck (b. 1863). How far their mission has been affected by the European war remains a problem of the future. **James A. Manson**

Germersheim. A town of Bavaria. It stands at the junction of the Queich with the Rhine, 9 m. from Spies. Its interest is mainly historical, although until the Great War it was one of Germany's minor fortresses. The chief buildings are churches and a hospital, and there are some small industries. Germersheim was a Roman station, and in the Middle Ages a free city. It was then a fortified town with a citadel. About 1620 it passed into the possession of the house of Hapsburg, but in 1644 it was taken by the French, as it was again in 1674. Austria recovered it in 1702; at the peace of 1814 it became part of Bavaria, and later it was fortified anew. Pop. 5,800.

Germinal. Seventh month in the year as rearranged during the French Revolution. It began on March 21 or 22, and the name means the month of buds.

Germination (Lat. *germinatio*, budding). Sprouting of a seed or spore. See Botany; Cotyledon; Seed; Spore.

Germiston. Town of the Transvaal, S. Africa. It is 9 m. by rly. S.E. of Johannesburg, and 36 m. S. of Pretoria. It is an important gold-mining centre and was formerly known as Elandsfontein Junction. Here is a station of the Victoria Falls and Transvaal Power Co., which supplies power to many of the mines. There are also manufactures of chemicals, agricultural implements, and hardware. Pop. 62,025, of whom 16,252 are Europeans.

Gernrode. Town of Germany. In the state of Anhalt, it is 13 m. S.S.E. of Halberstadt. Built on the side of the Stubenberg, it possesses a fine 10th century abbey church in the Romanesque style. Pop. 3,300.

Gerolstein. Town of Germany, in the Rhine province, 43 m. by rly. N. of Treves. One of the most picturesque places in the Volcanic Eifel, it lies at a height of 1,200 ft. on a rocky hillside commanded by

the ruins of a castle built in 1115. The district, with its volcanic formation and fossils, etc., is geologically interesting, and its mineral springs have a wide reputation. Pop. 1,350.

Gérôme, JEAN LÉON (1824-1904). French painter. Born at Vesoul, May 11, 1824, he studied under Paul Delaroche, making a successful début at the Salon in 1847 with *The Cock Fight*. Many of his subjects were classical, with a touch of modernity



Jean Léon Gérôme, French painter

in the treatment, and he had a competent technique. Awarded the Legion of Honour in 1855, he became commander in 1878.

In 1863 he became professor of painting at the École des Beaux Arts and in 1865 was elected a member of the Institute. His best known works include *The Age of Augustus* and *The Birth of Christ* (bought by the State), *The Duel of Pierrot*, *Phryne Before the Areopagus*, and *The Death of Caesar*. Latterly Gérôme turned to sculpture, achieving success with figures of Bellona, Napoleon, *The Gladiator*, and *Tanagra*. He died in Paris, Jan. 12, 1904. See Cleopatra; Gladiator.

Gerona. Maritime prov. of N.E. Spain, in Catalonia. It slopes from the Pyrenees to the Mediterranean.

Area, 2,264 sq. m. Traversed by the Barcelona-Perpignan Rly., it is bounded on the N. by France, on the S. and E. by the Mediterranean, and on the W. by Barcelona. One of the richest provs. of Spain, it carries on a large trade, and produces minerals, fruit, fish, timber, cork, copper, lead, iron, ochre, and wine. Cape Creus is the easternmost point on the peninsula. The coast-line is indented by one large bay, the Gulf of Rosas. The chief port is Portbou. Pop. 326,928.

Gerona (anc. *Gerunda*). City of Spain, capital of the prov. of Gerona. It stands at the confluence of the rivers Ter and Oñar, 52 m. N.E. of Barcelona, on the main line from Barcelona to Perpignan. It is connected with its



Gerona. Old houses seen from the bridge over the Oñar. On the extreme left is the unfinished spire of the church of S. Felix

suburb El Mercadel beyond the Oñar by a bridge. Its cathedral, begun early in the 14th century, stands on the site of an earlier edifice, and is a unique specimen of Gothic architecture. The manufactures include paper and textiles; coal, copper, etc., are mined. Pop. 16,000. There is also a town of this name in the Philippine Islands.



Gérôme. *The Death of Caesar*, painted in 1867, an example of the artist's treatment of classic subjects

Goupil

Gerona was a place of some importance during the Punic Wars, and it has had a tempestuous history, having been besieged numerous times. It is principally famous for its heroic defence by a few Spaniards and English volunteers against the French in 1809, the garrison finally capitulating through famine and disease. The city suffered severely from floods in 1762 and in 1829. Its bishopric dates from the 3rd century. Pop. 17,416.

Gerontius. General in the service of Constantine (*q.v.*), the usurping-tyrant in Gaul. After Constantine's defeat in 408, Gerontius rebelled against him, proclaimed Maximus, belonging to the household troops, and possibly his own son, emperor, and, having put Constantine's son Constans to death, set out in pursuit of Constantine, who was in refuge in Arelātē (Arles). Meantime, Honorius had dispatched troops against Constantine, and, securing his person on the surrender of the town, put him to death. Gerontius fled before Honorius's superior forces, but was seized by his own mutinous troops, who resented his severity. These fired the house in which he took refuge with his wife and one faithful servant, and, after a brave resistance, Gerontius slew his wife and servant at their own request, and then stabbed himself.

Gerrard's Cross. Parish and village of Buckinghamshire, England, 3 m. S.E. of Beaconsfield.



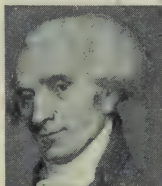
Gerrard's Cross, Buckinghamshire. S. James, built by Sir W. Tite

Formerly known as Jarret's Cross, and sometimes spelled Gerard's Cross, it is served by the G.W. and G.C. Rlys. S. of the village on the common is the church of S. James, built in 1859 from designs by Sir W. Tite, in the Lombardo-Byzantine style, as a memorial to Major-General Reid, sometime M.P. for Windsor. W. of the common is Bulstrode Park, a seat of Sir J. F. Ramsden, Bart., named after a 17th century holder of the manor. Bulstrode's mansion was

rebuilt by Judge Jeffreys, passed to the 1st duke of Portland, was sold by the 4th duke of Portland, purchased in 1810 by the 12th duke of Somerset, and rebuilt by his successor in the title. In the park is a circular earthwork enclosing 21 acres. Pop. 1,612.

Gerresheim, Town of Germany, in the Rhine province of Prussia. Lying only 3 m. E. of Düsseldorf (*q.v.*), of which it is now a suburb, it is a busy place with glass, wire, and silk factories, etc. The parish church, dating from the 13th century, is notable. Pop. 12,000.

Gerry, Elbridge (1744-1814). American statesman. Born at Marblehead, Massachusetts, July



Elbridge Gerry, American statesman

17, 1744, he became a member of the general court of Massachusetts, where he showed an open hostility to British rule. In 1776 he was a member of the Continental Congress, and was active in the preparation

tion of the Declaration of Independence, of which he was a signatory. In 1797 he was one of a mission sent to the French Directory to arrange for the recognition of the republic. Governor of Massachusetts 1810-12, he was largely responsible for a law dividing the state into senatorial districts which gave the government unfair advantage over the opposition. From this arose the term gerrymander. In 1813 he became vice-president of the U.S.A., which position he held until his death at Washington, Nov. 23, 1814. See Life and Letters by J. T. Austin, 1828-29.

Gers. Dept. of S.W. France. Its area is 2,428 sq. m. Tributaries of the Garonne, the Gers, Baise, Save, Gimone, and others coming down from the Pyrenees are the chief rivers. The Adour also flows through the dept. The dept. is a hilly area, specially in the S. Wheat, maize, and oats are grown; wine and brandy are made; and horses, cattle, sheep, and poultry are reared. Auch is the chief town. Others are Lectoure, Mirande, Condom, and Lombez. Before the

revolution the dept. was mainly in Gascony. *Pron.* Zhare. Pop. 221,994.

Gerson, JEAN CHARLIER DE (1363-1429). French scholar and divine. He was born in humble



J. C. de Gerson, French scholar

circumstances at Gerson, Dec. 14, 1363, and educated at the college of Navarre, Paris. Taking holy orders, he became canon of Notre Dame and chancellor of

the university of Paris in 1395. He worked hard to check the careless lives of the clergy, to end the Great Schism then dividing the papal court, and to amend the too scholastic education of the university. His outspokenness led to his withdrawing to Rattenberg in Tirol in 1418 for a time, during which he wrote his best known work, *On the Consolation of Theology*. Later he retired to a monastery at Lyons, where he died July 12, 1429.

Gersoppa. Village and falls of Bombay, India, in the Honevar subdivision of North Kanera district. The great ruins of Nagarbastikere, the capital of the Jain chiefs of Gersoppa (1409-1610), are about a mile and a half to the E. of the village. According to tradition the capital contained 100,000 houses and 84 temples. The Gersoppa Falls, which are unrivalled in India, lie 18 m. E. of the village, and are on the Sherevati river. At this spot the river has a breadth of about 230 ft., and the water falls over a cliff 830 ft. high in four separate leaps.

Gerstäcker, FRIEDRICH (1816-72). German novelist and writer. Born at Hamburg, Nov. 10, 1816, he went to America, where he travelled extensively afoot during 1837-43. Having told his experiences in a series of diary-letters, he returned to Germany to find himself famous. Thenceforth he devoted himself largely to descriptive books of travel. He went round the world, 1849-52; journeyed in S. America, 1860-61; in Egypt and Abyssinia, 1862; and in N. and Central America and the W. Indies, 1867-68. These successive journeys he made the subject of many interesting volumes, several of which were translated into English. He also won success with some fiction largely inspired by his travel experiences. He died at Brunswick, May 31, 1872.

Gerstenhofer Furnace. Roasting furnace first used at Freiberg in Germany, but also extensively

employed at Swansea for the roasting of pulverised copper matter. It is a shelf furnace in the form of a square shaft, across which are arranged, at equal distances, and one above the other, a number of horizontal fire-clay bars. The ore is introduced at the top and falls from bar to bar, arriving at the bottom to a very large extent desulphurised. *See* Furnace.

Gertrude. Name of two saints of the Latin Church. (1) Gertrude (d. March 17, 659), a daughter of Pepin, the father of Charlemagne, was the first abbess of the convent of S. Gertrude at Nivelles, Belgium. On the high altar of the existing (11th century) edifice is a beautiful 13th century reliquary of S. Gertrude, who is revered as the patron of travellers and pilgrims. (2) S. Gertrude, born at Eisleben, Saxony, Jan. 6, 1256, became an abbess. She had many visions and wrote some mystical exercises. She died Nov. 15, 1334.

The name, of Teutonic origin, means Spear maiden and is one of a group to which Gerald belongs. It is found in the Nibelungenlied and is a popular feminine Christian name in England.

Gervase of Tilbury (d. 1235). English writer. Born probably at Tilbury, he grew up in Italy, teaching law at Bologna about 1175. He became marshal of the kingdom of Arles, under the patronage of the emperor Otto IV, for whom he wrote in Latin his *Otia Imperialia*, 1211-14, a comprehensive but fantastic summary of history, geography, current popular beliefs, politics, etc.

Gervex, Henri (b. 1852). French painter. Born in Paris, Dec. 10, 1852, he studied under Cabanel and other painters.



Henri Gervex,
French painter

He made a brilliant appearance with his *Bather Asleep*, 1873, and *Satyr Playing with a Bacchante*, 1874, in the academic manner. But he showed equal power in realism with his *Post Mortem* at the Hôtel Dieu, and his portrait-group of the founders of the French Republic. Some of his portraiture was daring almost to recklessness, especially his *Rolla* and *Masked Lady*, the former rejected by the Salon, 1878. He earned distinction by his decorative paintings for public buildings, e.g. *The Civil Marriage*, and *The Board of Charity*. In 1913 he was elected to the Academy.

Gervinus, Georg Gottfried (1805-71). German author. Born at Darmstadt, May 20, 1805, and educated at Giessen and Heidelberg, he became a teacher and soon began to write. His *History of German Poetry*, 1853, is a work of great value; the nucleus of this work had appeared between 1835 and 1842 under a different title. In 1837 appeared his *Foundations of History*. He was appointed professor of history and literature at Göttingen, where he was one of the seven professors expelled in 1837 for their protest against the unconstitutional acts of Ernest Augustus, and in 1848 he was a member of the Frankfurt parliament. He died March 18, 1871.



Georg G. Gervinus,
German author

Gervinus was anxious for the unity of Germany, and in this cause he founded in 1847 *Die Deutsche Zeitung*, which he edited until 1848. His other works include *Introduction to the History of the Nineteenth Century*, Eng. trans. 1853; and *Shakespeare Commentaries*, Eng. trans. 1863.

Geshur. One of the ancient states of Palestine, lying E. of the Jordan. David married a daughter of its king, and it was here that Absalom took refuge.

Gesneraceae. Large natural order of herbs and shrubs. They are chiefly natives of the warmer regions of America. Some of the species, such as *Gloxinia*, have tuberous roots. They have opposite, wrinkled leaves, and showy tubular flowers of scarlet, blue or white.

Gessner, Salomon (1730-88). Swiss poet. He was born in Zürich, April 1, 1730, where he set up as a bookseller, but soon turned to literature, also painting and engraving landscapes. He won his chief popularity in Germany by his sentimental Idyllen, 1756. His

Tod Abels (*Death of Abel*), 1758, written in an irregular kind of loose poetry, enjoyed considerable success in Germany, and was translated into six European languages. By 1788 it had passed through 30 English editions. In 1772 he issued a second series of Idyllen, and *Letters on Landscape Painting*. His Idylls, with one of the



Salomon Gessner,
Swiss poet

Letters, were translated into English, 1798. He died March 2, 1788.

Gesso (Ital., plaster). Preparation of plaster used as a ground for painting or laid over another substance for the same purpose. It must be employed with care, being liable to chip. *Gesso duro* (hard plaster), specially made of gypsum, has been utilised for sculpture work, generally in low relief. *See* Painting; Sculpture.

Gesta Romanorum (*Deeds of the Romans*). Medieval collection of tales from Roman history and other sources, probably compiled about the close of the 13th century. The object was to provide stories which could be used to enforce or enliven lessons from the pulpit. The collection was first printed at Utrecht in 1473, the first English edition being issued by Wynkyn de Worde about 1510. There have been many later versions, the fullest being that by C. Swan, 1824, new ed. 1905.

Gestation (Lat. *gestatio*). The act of carrying the young in the womb or uterus from conception to birth. In the human species the average duration of gestation is 278 days, exceptionally prolonged to as many as 300. In France and Scotland, the law assumes the possibility of pregnancy lasting for 300 days, and in Germany 302 days. In England no legal limit is laid down. *See* Pregnancy.

Gesture Language. Communication of thought by movements of parts of the body other than the organs of speech. Gesture may be (1) explicit, as in pointing or holding up a coin; (2) pantomimic, as in pretending to drink; (3) emotional, as in shrugging the shoulders; (4) conventional, as in raising the hat.

All these forms denote concrete ideas rather than words. The last three may consist of grimace; the first three are mutually intelligible to persons of every grade of culture when for any reason unable or unwishful to converse by speech. Conventional gesture may be unintelligible without previous explanation. Natural gesture never attained the power to communicate abstract ideas, or to represent the more complex parts of speech. It reached its highest developments in recent centuries among the Indians of the N. American plains and the populace of Naples.

No normally speechless community has ever been recorded. Voluntary vows of silence, such as those taken by some Trappist monks, and the involuntary silence of deaf mutes have led to the invention of conventional systems of manual signs. *See* Language; Phonetics.

Getae. Thracian tribe. Later called Daci, their earliest home was on both banks of the Ister (Danube) from its mouth as far as the Tisia (Theiss). Byrebistas (Boerebista) founded a Daco-Getic kingdom about 50 B.C., which after his death fell to pieces. It was revived during the early empire, but the territory was conquered by Trajan (A.D. 106) and made a Roman province. The Getae were a religious people, who are said to have believed in the transmigration of souls and to have worshipped a certain Zamolxis, sometimes identified with Sabazius, the Thracian Dionysus. In spite of the similarity of name, they were no way akin to the Goths, by whom they were absorbed in the 3rd century. See Dacia.

Gethsemanē. Retired spot on the slope of the Mt. of Olives, about $\frac{3}{4}$ m. from Jerusalem. A garden in Gethsemane was a favourite resort of Christ, and it was there, or near by, that He was betrayed by Judas. A garden, still preserved as the actual one, is considered by modern explorers to be too near the city walls. Excavations were carried out in the garden in 1920, in the course of which remains of a 4th century and a 13th century church were discovered. See Jerusalem; Palestine.

Getter. In executing earthworks, the man who excavates the material for the filler who loads the trucks or barrows and the wheeler who trundles them. The proportion of getters, wheelers, and fillers is as follows: in loose earth, gravel, and sand, 1-1-1; in compact earth and marl, 1-2-2; in clay, 1-1-1; in rock, 3-1-1. See Earthwork.

Gettysburg. Bor. and co. seat of Adams co., Pennsylvania, U.S.A. It is 70 m. N. of Washington and 25 m. S.W. of Harrisburg, on the Western Maryland and Gettysburg and Harrisburg railroads. It was planned in 1780, named after General James Gettys, made a co. seat in 1800, and a bor. in 1806. Of its two Lutheran institutions, the theological seminary dates from 1826 and Pennsylvania College from 1832. The field on which the great battle of July, 1863, was fought was dedicated in Nov., 1863, as a national cemetery; it contains 3,629 graves, 1,630 of unknown dead, and a number of memorials, including one, on Cemetery Hill, which, surmounted by a statue of Liberty, has at its foot figures symbolic of War, Peace, History, and Plenty. Pop. 4,000.

Gettysburg, BATTLE OF. One of the decisive conflicts of the American Civil War. It was fought at Gettysburg, Pennsylvania, July

1-3, 1863. The battle area, consisting of mountain, valley, rugged hill, precipitous cliffs, meadow, plain, stream, forest, and undulating green fields, was suited to bring armies into every possible form of action; but the seven

and there to force the issue, giving strict orders, however, that private property should be respected. One of Meade's objectives was the defence of Washington, and he took up a strong position S. of Gettysburg, on Cemetery Ridge. The Confederate forces occupied Seminary Ridge, nearly opposite.

The great struggle began on July 1, when Buford's cavalry resisted the advance of Hill's Confederate troops. During the afternoon Ewell's corps from the N. threatened the Federal infantry which had come to Buford's help, and the

Federals were driven back to Cemetery Ridge and Culp's Hill. Both armies were assembled by the afternoon of July 2, when the Federals occupied a curve from Culp's Hill to the Devil's Den and the Confederates threatened them with a longer line, Longstreet's corps having taken up the position opposite the Round Top hills. Longstreet attacked about 4 p.m., and drove the Federals back to the main ridge, but failed to carry the Round Tops, which were hurriedly occupied by Federal reinforcements.

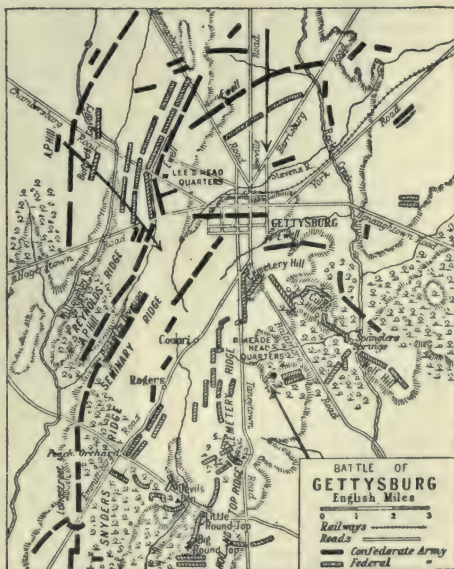


Gethsemanē. The garden near Jerusalem which tradition marks as the scene of Christ's betrayal

severe engagements were fought mainly in a valley between two great ridges. In the result the Federal Army of the Potomac, 82,000 men, under General Meade, defeated the Confederate Army of North Virginia, 73,000 men, under General Lee. The Confederate leader escaped by a masterly retreat across the Potomac.

In the preceding December, Lee had repulsed an attack by Burnside at Fredericksburg, inflicting losses of over 10,000 men and forcing the Federals to retire behind the line of the Rappahannock. Hooker, at Chancellorsville (q.v.), at the end of April, resumed the Federal offensive, but, attacked by Lee in front and flank, was, after four days' heavy fighting, forced once more behind the Rappahannock, both sides suffering very heavy losses.

In June Lee's army crossed the Potomac at two points not far from the battlefield of Antietam, and, perceiving that Meade, who succeeded Hooker on June 28, could isolate him in an enemy's country, determined to face towards Gettysburg



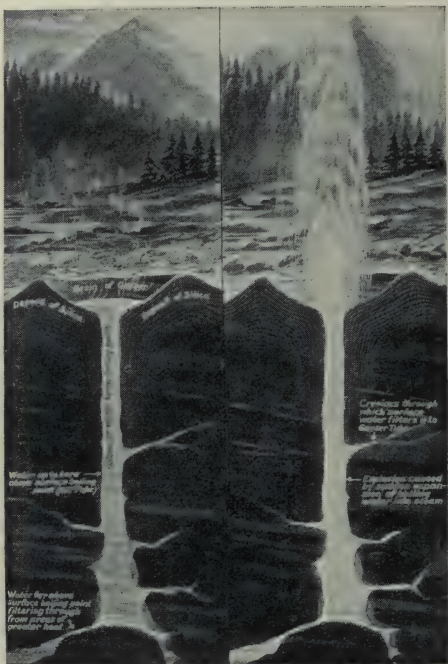
Gettysburg. Plan of the dispositions of the opposing forces during one of the chief battles of the American Civil War

Later in the afternoon Ewell's troops occupied Culp's Hill, and at nightfall, at Spangler's Springs, friend and foe knelt together to quench their thirst. Meade decided to defend his positions, and early on July 3 regained Culp's Hill. After fierce artillery preparation Lee's centre, under the command of General Pickett, attacked strongly during the afternoon. The guns of the Federals swept the advancing troops, making great gaps in their ranks; but the ranks closed, the advance continued, the Federal line was broken and the ridge gained, but it could not be held; only a shattered remnant of Pickett's forces made its way back. With Meade remained the victory. Lee withdrew his broken army into Virginia. The losses were estimated as follows: Federals, 3,072 killed; 14,497 wounded; 5,434 prisoners and missing; Confederates, 2,592 killed; 12,709 wounded; 5,150 prisoners and missing. There is, however, reason to believe that the Confederate losses were heavier. In Nov., when the battlefield was dedicated as a National Cemetery, President Lincoln made a two minutes' speech which has become immortal. See American Civil War; Lee; consult also Chancellorsville and Gettysburg, A. Doubleday, 1882; Battle of Gettysburg, S. Drake, 1891, and Comte de Paris, new ed. 1912; U.S. Official Records, vol. xxvii, parts 1-3.

Geulincx, ARNOLD (1624-69). Belgian philosopher. Born at Antwerp, Jan. 31, 1624, he became professor of philosophy in the universities of Louvain, 1646-58, and Leiden, 1665-69. He founded the system known as Occasionalism. He denies any reciprocal action of body and soul, comparing them to two watches which, although separate and independent, are in agreement. God is the intermediary. On the occasion of a bodily process, a definite sensation arises in the soul, and on the occasion of an idea in the soul, the body moves—as the result of divine agency.

Geum. Handsome, hardy, dwarf perennial herbs of the natural order Rosaceae. Natives of Britain, India, and N. America, their height varies from one to two ft. The flowers are red, white, and yellow, and they are propagated by seed in spring, and by division of the roots in autumn. For rock gardens *G. montanum*, which has rich yellow flowers in abundance in early spring, is the most attractive.

Gevaert, FRANÇOIS AUGUSTE (1828-1908). Belgian composer. Born at Huyse, in E. Flanders, July 31, 1828, the son of a baker,



Geyser. Diagram illustrating the principles which cause the geyser at rest, left, to spout boiling water, as seen in the right

he studied at the Conservatoire at Ghent. He became organist of the Jesuit Church there, and travelled in Spain and Italy; from 1867-70 he had a post at the Paris Academy of Music, and in 1871 was made director of the Brussels Conservatoire. His compositions include many operas; he wrote also on the history and theory of music in ancient times. He died in Brussels, Dec. 24, 1908.

Gevelsberg. Town of Germany, in Westphalia. It lies 6 m. from Hagen, on the Westphalian coal-field, and is a modern industrial town, known for its manufactures of

formed locally in the tube and lifts the water above it; more steam is then formed rapidly. This reduces the pressure and the whole is shot into the air.

Geyserland, situated near Rotorua, in North Island, New Zealand, is equally famous for its hundreds of geysers, its boiling springs, mud volcanoes, and fumeroles. Although the natural fountains do not rival in height those of Wyoming, the best of them sprout from 80 to 100 ft. Waikite is noted for the beauty of the silica cone at its orifice. Pron. Guy-zer.

Geyser. Domestic appliance for the rapid supply of hot water. It consists of a long coil or spiral of copper, brass, or iron tubing through which water continually flows from the source of supply to the container. The tube is exposed to a gas or other flame, a large surface of water thereby being heated at one time. The metal tube is made very thin so that the heat passes through it instantly. The water flows through the tube, thus constantly presenting fresh water to the heated metal surface. In this way a large quantity of water can be raised to boiling point much more quickly than in an ordinary vessel. Most modern geysers are now supplied with a single tap



Geum. Foliage and flower of *Geum rivale*



1. Crow's Nest Geyser, New Zealand. When in eruption it invariably gives two jets at an interval of 90 seconds.
2. Waikite Geyser, one of the largest in North Island, New Zealand.
3. Geyser in Yellowstone Park, Wyoming.
4. Wairoa Geyser, New Zealand, near the scene of the eruption of 1881

GEYSER: EXAMPLES OF NATURE'S WONDERFUL BOILING FOUNTAINS

which simultaneously turns on both gas and water, and so practically removes any danger of explosion.

Geyserite. Variety of opaline silica found in deposits round the geysers of Iceland, New Zealand, etc. Found in masses of pearly lustre sometimes of great beauty, it consists chiefly of silica with 10 to 12 p.c. of water.

Gezer. City of Palestine, 16 m. W.N.W. of Jerusalem, commanding the Philistine plains. It was the dowry of the Egyptian princess whom Solomon wedded. Assyrian, Egyptian, and Hebrew inscriptions help the dating. R. A. S. Macalister's excavations (1902-9) revolutionised Palestine archaeology. His memoir (1912) illustrates 4,000 objects. Some pertain to thick-skulled neolithic cave-dwellers living before 3,000 B.C., who practised cremation, kept domesticated animals, and used bone implements. To a taller race, who buried their dead and practised human sacrifice, may pertain a rock-bored water-tunnel 219 ft. long. Semitic settlers (2,500 B.C.) are represented by their high place; Egyptian influence appears (1,400 B.C.); Philistine graves contain human remains, and silver and gold work.

Gezira or **BLUE NILE PROVINCE.** Division of the Anglo-Egyptian Sudan, situated between the Blue and White Nile. It contains the districts of Abu-Deleig, Kamlin, Managil, Mesellema, Rufaa, and Wad Medani, is exceedingly fertile, and produces maize and cotton. Although cotton-growing is only in its experimental stage, yet, with ample irrigation from the captured flood waters of the Blue Nile, the output should be greatly improved. The area is 12,580 sq. m., and the pop. 192,879.

Gröner, AUGUST FRIEDRICH (1803-61). German historian. Born at Calw, Württemberg, March 5, 1803, he was educated at Tübingen University. He was first a student of theology, which he taught in his own university, but from 1830, when he entered the royal library at Stuttgart, his interests were mainly in historical research, ecclesiastical history claiming a large share. In 1846 he became professor of history at Freiburg, and in 1848 was a member of the Frankfort parliament. He died July 6, 1861. He wrote a work on Gustavus Adolphus and his times, 1835-37; *A History of Early Christianity*, 1838; *A General History of the Church* down to 1305, 1841-46; a work in seven volumes on Hildebrand and his Age, 1859-61; *A History of the 18th Century*, 1862-73; and other books. He joined the Church of Rome in 1853.

Ghadames, GADAMES or **RHADAMES.** Oasis and town in the extreme W. of the Italian colony of Libia (Tripoli). It is 300 m. S.W. of Tripoli, and is an important centre for the trade of the interior. In Roman times it was known as *Cydamus*. Pop. about 10,000.

Gharbiyeh or **GHARBIEH.** Maritime prov. of Lower Egypt. It contains the districts of Borollos,

term is used for the scarped sea faces of the Deccan peninsula, the Western and Eastern Ghats.

Ghat or **RHAT.** Village and oasis of N. Africa. It is in the country of the Tuaregs, on the W. border of Fezzan, and is an Italian possession. It lies on the route from Tripoli to the W. Sudan, and is supposed to be the *Rapsa* mentioned by Pliny, although tradition states

that it was built only two centuries and a half ago. Ghat maintained its independence until 1875, when it was taken by the Turks. Pop. about 4,000.

Ghats. Two great mt. ranges in India, called respectively the Eastern Ghats and the Western Ghats. Between them lies the triangular tableland of the Deccan.

The Eastern Ghats, a line of small ranges, begin in Orissa, and thence continue through Ganjam to the Nilgiri plateau, where the junction is effected with the Western Ghats. They approach the Bay of Bengal in Ganjam and Vizagapatam, but afterwards their course lies inland, leaving between them and the sea a long stretch of low country with a maximum width of 150 m. The Western Ghats, whose length is 1,000 m., form a sea-wall for the W. side of the peninsula, the Palghat Gap being the main route through this barrier.

The two ranges have determined developments on the coasts of S. India. On the eastern side the wide lowlands facilitated the spread of civilization, and it was there that the capitals of the great kingdoms of S. India were established: but on



Gezer. Ruins of the bath house of Simon Maccabaeus (c. 143 B.C.), who took the town from the Syrians

Desuq, Fua, Kafr-el-Sheikh, Kafr-el-Zayat, Mehalla-el-Kubra, Santa, Sherbin, Talkha, Tanta, and Zifta. Area, 2,534 sq. m. Pop. 1,484,814.

Ghardaia. Town and oasis of Algeria, in the Sahara. It is about 310 m. S.E. of Algiers, is walled, and is surrounded by fruit plantations. It forms one of the three principal routes from Algeria to the Sahara. It is to be connected by rly. with Laghuat, to which point a rly. is being constructed from Ain Ussera. Pop. of oasis, 38,000; of town, 8,000.

Ghat (Hindu, path of descent). Flight of steps upon a river bank in India. Designed primarily to facilitate bathing, drinking, and other ritual acts, they served as landing-places, and are found along the Ganges at every city from Calcutta to Hardwar. Of the 47 ghats at Benares (*q.v.*)—surmounted by temples, rest-houses, images, and holy wells—five are visited by all pilgrims. Manikarnika, the most sacred, and Sma-shan—the burning ghats—have cremation grounds. Munshi is the most picturesque. Ghosla the most massive, Sivala the handsomest, although surpassed in elegance by one at Maheswar on the Nerbudda. The



Ghat. Hindus laying a pyre at a burning ghat, Benares, where bodies are cremated



Ghats. Reversing station on the incline of the Ghore Ghat, in the Western Ghats of India

the western side the inhabitants of the narrow coast land, being practically cut off from the interior by the Western Ghats, were left to develop their own civilization.

Ghazali, ABU HAMID MOHAMMEDEL (1053-1111). Arabian philosopher and theologian, called the proof of Islam. He was born and died near Tus, in Khorasan, where he founded a Sufi monastery. Ghazali combines a firm adherence to orthodox Islam with neo-Platonism, and a generally sceptical attitude towards all philosophy. In his *Revivification of the Sciences of Religion*, he seeks to free Mahomedanism from a dead and uninspiring formalism.

Ghaziabad. Town and subdivision of the United Provinces, India, in the Meerut District. Area, 493 sq. m. Of the total area, about three-quarters is under cultivation, indigo being one of the important crops. Ghaziabad town is on the trunk road from Calcutta to Peshawar, and is an important rly. junction. Pop. about 10,000.

Ghazipur. Town and district of the United Provinces, India, in the Benares Division. Area, 1,389 sq. m. Of the total area, three-quarters is under cultivation; of the cultivated area, about half is devoted to rice and barley; other crops are peas, pulses, and sugarcane. Ghazipur town, founded according to tradition by a Saiyid chief, Masud, in 1330, contains the tomb of Lord Cornwallis, who died there in 1805. Pop. 40,000.

Ghazni, GHIZNI OR GHUZNEE. Town of Afghanistan. It is about 80 m. S.W. of Kabul, and is still a place of some commercial importance. Though it stands over 7,300 ft. above sea level, wheat and barley are grown in the neighbourhood. In the 10th and 11th centuries it was the great and flourishing capital of the Ghaznevids, a race of princes who ruled over an empire that included most of Afghanistan and Persia, as well as a large part of India.

They gave place to the princes of Ghur, one of whose sovereigns

burned Ghazni, and established himself as head of an empire even larger than that of the Ghaznevids. The ruins of the old town, which are extensive, lie about 3 m. N.E. of the present town, which is on the caravan route from Persia to India, by the Gomal Pass. An old

castle dominates the town. In the Afghan Wars Ghazni was captured by Lord Keane in 1839, but the Afghans retook it in 1842, losing it in the same year, however, again to the British, then under General Nott. Pop. 10,000.

Gheel. Town of Belgium, in the prov. of Antwerp. It lies about 28 m. E. of Antwerp, and has the fine Gothic church of S. Dymphna, a patroness of the feeble-minded. Pop. 14,600. It is chiefly noted for its insane colony, where some 2,000 mentally afflicted persons are boarded out among the inhabitants for family treatment, under official supervision.

The commune is divided into six sections, each under the charge of a physician and an assistant officer. There are also inspectors appointed by the minister of justice, to each of whom a district is assigned, every patient in which they visit once a fortnight. The patients are divided into two classes: private paying patients, living in the charge of persons known as *hôtels*, at varying fees, and pauper patients, in the care of *nourriciers*.

The advantages of the Gheel system are that a large number of the insane are well provided for altogether outside of asylum administration; are placed in a position where their life approaches much more nearly to the life they would have led had they never become insane; are, to a great extent, restored to a place in the general community; and are made to share in the interests and occupations of the sane.

Among its disadvantages is the fact that the care of the insane has become what may almost be called the staple industry of the place. In the history of the treatment of insanity, Gheel occupies an honourable place. See *Insanity*.

Gheluvelt. Village of Belgium, in the prov. of W. Flanders, 4 m. S.E. of Ypres on the Ypres-Menin road. It was the scene of desperate fighting in the Great War, especially in the first battle of Ypres, Oct. 24-31, 1914, and no position was

more hotly disputed. The 2nd battalion Welch regiment alone lost 17 officers and 600 other ranks in killed and wounded here. Captured by the British in Oct., 1917, it was lost in the spring of 1918, and finally taken at the end of Sept., 1918, in the battle for the Belgian coast. Several war memorials are to be erected here, including one to the officers and men of the above battalion and one to the Second Division. See *Flanders*, *Battle of*; *Ypres*, *Battles of*.

Ghent (Fr. *Gand*). City of Belgium, capital of the prov. of E. Flanders. It lies 31 m. N.W. of



Ghent arms

Brussels, at the meeting of the rivers Lys and Schelde, the arms of which intersect the city in all directions. An important rly. centre, with two large stations, it is situated in the midst of flat, well-cultivated country. Ghent is connected with the S. arm of the estuary of the Schelde at Terneuzen, about 21 m. N.N.E., by a ship canal, built 1826-27, and deepened 1895-96, and has also good inland waterway communications. Apart from its administrative importance and its university (founded 1816), Ghent has considerable cotton and linen manufactures, tanneries, breweries, engineering works, and sugar refineries; a busy trade in timber, phosphates, flax, potatoes, cement, etc.; and many nurseries and hot-houses. Ledeberg, Mont-S. Amand, and Gentbrugge are populous suburbs. Pop. 163,595.

Its many old buildings in the Flemish style, the narrow, curving lanes, and the countless bridges and waterways make Ghent one of the most picturesque of Belgian cities. Foremost among the historic buildings is the cathedral of S. Bavon, the city's patron saint, founded about 940, which became a cathedral in 1559. The exterior is plain, but the interior is full of beauty. The choir dates from the 13th century, the nave and transepts from the 16th, and in the cathedral is the famous altar-piece of The Adoration of the Lamb, painted 1420-32 by the Van Eycks; some panels of the complete work were sold in 1816, but were returned to Ghent from Berlin by the treaty of Versailles in 1920.

The hôtel de ville is a large block dating in part from the close of the 15th century, with handsome façades of 16th century Gothic and early 17th century Renaissance styles. A lofty belfry (390 ft.),



Ghent. Plan of the city, showing principal buildings and docks

built mainly in the 14th century, stands in the centre of the town, and not far off is the castle of the counts of Flanders, a typical medieval stronghold founded in the 9th and rebuilt in the 12th century, the seat of the Council of Flanders from 1407 to 1778.

The history of Ghent is closely interwoven with that of Flanders. It was in existence by the middle of the 7th century, and Baldwin, 1st count of Flanders, made it one of his strong points in 868. During the 13th-15th centuries Ghent became one of the greatest marts of W. Europe, and the burghers, always known for their turbulence and independence, increased their strength by their accumulated wealth; the story of the Van Artevelde, and the determined revolt against Philip of Burgundy, 1448-53, were typical of Ghent's character in those days. At the same time the arts flourished in Ghent, which the Van Eycks made a

great centre of Flemish painting. During the troubled times of the 16th century the city suffered severely, especially after her surrender to the duke of Parma in 1584.

In 1794 Ghent was made the capital of the newly created French dept. of the Schelde, but became part of the United Netherlands in 1814, and part of Belgium in 1830. Several treaties are named from their having been concluded here, notably the pacification of Ghent, by which the N. and S. provs. united against Spain in 1576, and the peace of Ghent between Britain and America, 1814.

Ghent was occupied by the Germans during the Great War on Oct. 12, 1914. The city was recaptured by the Belgians Nov. 11, 1918. See Belgium; Flanders.

Gherba. Island in the Gulf of Gabes, Mediterranean Sea, belonging to France. It lies off the E. coast of Tunis, 12 m. E.S.E. of Sfax and S.W. of the island of Ker-

kena, from which it is separated by a narrow strait. It is 10 m. in length from W. to E., and 5 m. from N. to S.

Ghetto (Ital.). Word translated into English as Jewry, and meaning a part of a town inhabited entirely by Jews. See Jewry.

Ghevveli or **GEVVELI.** TOWN of Yugo-Slavia, 35 m. N.W. of Salonica. Occupied by the British at the beginning of Nov., 1915, it was evacuated, the Bulgarians entering it on Dec. 12. It was recaptured by the Allies Sept. 22, 1918. See Salonica, Expedition to; Serbia, Conquest of.

Ghi or **GHEE** (Hind. from *ghar*, to drip). Clarified butter used in the East not only for food but also medicinally and in religious ceremonies. The butter is heated and skimmed or strained till it becomes a semi-solid oil which may be kept for years.

Ghibellines. Italian political faction. It originated in Germany, the story being that in a fight near Weinsberg, in 1140, between the German king Conrad III, one of the Hohenstaufen family, and the ruler of Bavaria, Welf, the troop of the latter called out as a rallying cry Welf, to which the others replied with Waiblingen, the name of Conrad's castle. Welf became Guelph, and Waiblingen became Ghibelline. See Florence; Guelphs and Ghibellines.

Ghiberti, LORENZO (1378-1455). Italian sculptor. Born at Florence, he began his career as a gold-



Lorenzo Ghiberti,
Italian sculptor
From an old print

smith, a craft which gave him wonderful facility in drawing, modelling, and design. By far his greatest work was the two magnificent bronze gates for the baptistery in Florence, unrivalled examples of this kind of bas-relief, which Michelangelo declared to be fit for the gates of Paradise. The first of the gates, which illustrate Biblical subjects, occupied Ghiberti for 21 years, 1403-24, and the second for 23 years, 1424-47. See Door, illus.

Ghika, ION (1817-97). Rumanian diplomatist. Grandson of Scarlat Ghika, prince of Wallachia, he early developed strong revolutionary principles which necessitated his living in obscurity. He became professor of mathematics at Jassy University, while from 1853 to 1859 he was bey of Samos.



1 and 9. Detail and general view of N. façade of Hotel de Ville, 16th century. 2. Château du Diable, 13th century. 3. The Belfry, 14th century, with tower of cathedral on right. 4. Le Rabot, fort built 1489. 5. Castle of

Counts of Flanders. 6. De Vigne-Quyo's statue (1863) of Jacob van Artevelde. 7. Palais de Justice, 1836-46. 8. Building of old Béguinage. 10. Cathedral of S. Bavon, from the Belfry. 11. The Quai aux-herbes

GHENT: CITY FAMED IN FLEMISH AND BELGIAN HISTORY



Ghirlandaio. The Last Supper, a fresco painted in 1480 on the refectory walls in the old monastery of Ognissanti, Florence

He had long been agitating for the union of Moldavia and Wallachia, and when this took place in 1859 Ghika returned to Bukarest and became the first prime minister. He was Rumanian ambassador in London, 1881-89, and died May 7, 1897.

Ghilan OR **GILAN.** Prov. of Persia. Lying between the Elburz Mts. and the Caspian, it has an area of 4,673 sq. m. and a pop. of 150,000. It is bounded W. by Azerbaijan, S. by Kazvin, and E. by Mazanderan. Though suffering from inundations, its soil is fertile, producing wheat, barley, and fruit, and it has a trade in silks. Its chief town is Resht.

Ghilzai. Afghan tribe between Kandahar and Kabul. They are Pushtu-speaking Moslems, claiming Turkish descent, and they rank in military prowess with the dominant Durani, but are distinguished by their commercial enterprise. They furnish the camel-caravans of Povindah merchants who have for centuries traded between India and Russian Turkistan.

Ghioura. Variant of the Greek island better known as Gyaro (*q.v.*).

Ghirlandaio, DOMENICO (1449-94). Italian painter. Born at Florence, his name was Domenico Tommaso Corrado Bigordi, the adopted sobriquet indicating that he was a maker of garlands. Apprenticed to a goldsmith, he also studied painting under Alessio Baldovinetti (*q.v.*). Between 1480 and his death, Jan. 11, 1494, he produced many important works in tempera and fresco, and in mosaic. Among his most notable

paintings are S. Jerome and The Last Supper, 1480, in Florence; the fresco of S. Peter and S. Andrew in the Sistine Chapel, 1483, Rome; Adoration of the Magi, 1488, Florence; the Tornabuoni frescoes, 1490, in S. Maria Novella, Florence; The Visitation, 1491, in the Louvre.

His mosaic of the Annunciata, in Florence Cathedral, is justly celebrated. In spite of a hardness in his colour effects, Ghirlandaio must be placed among the greatest painters of his century. For a short time Michelangelo was one of his pupils, and his son, Ridolfo (1483-1560), was also a painter of ability. *Pron.* Gear-lan-di-yo.

Ghistelles. Village of Belgium, in the prov. of W. Flanders. It is 11 m. S.S.W. of Bruges on the Ostend-Thorout Rly. From the autumn of 1914 until Oct. 16, 1918, it was in the possession of the Germans, who established an aerodrome here which was bombed by allied airmen, Feb. 16, 1915, to Aug., 1918.

Ghost. Spirit of a dead person manifesting itself in some form perceptible to the senses of the living. Some measure of belief in such posthumous manifestations has been held in all times and by all peoples. The ghost is frequently associated with some crime in which the person has been concerned either as perpetrator or as victim, and is generally said to appear about the hour of midnight and to disappear at cockcrow.

Sometimes these apparitions are described as sheeted ghosts, implying an appearance in their shrouds,

and sometimes as appearing in the habit in which they lived, implying spiritual replicas of material things, as in Hamlet. *See* Psychical Research; Survival.

Ghost Moth (*Hepialus humuli*). Common British moth. The male has shining white wings with reddish fringes, the female yellowish wings with brown spots and streaks. The under surface of the wings in both sexes is brown. This moth is often seen at night, when its peculiar flight causes the white upperside of the wings to appear and disappear at intervals, whence its name.

Ghoul (Arab. *ghūl*). Monster of Oriental legend supposed to haunt burial places and devour the corpses of the dead. Hence the word is figuratively used of anyone who revels in gruesome matters.



Ghost Moth. Upper pair English, and lower pair Shetland, form of *Hepialus humuli*

G.H.Q. Abbrev. for General Headquarters. *See* Staff Work.

Ghur OR **GHOORE.** Town of Afghanistan, 120 m. S.E. of Herat. It was in the 12th century the capital of a powerful empire.

Ghurian OR **GARIAN.** Ancient town in Tripolitania. It is 74 m. S. of Tripoli, with which it is con-

nected by rly. Ghurian is built on a hill, and possesses a fine and commanding castle and the residences of the Troglodytes or cave-dwellers. Pop. of town about 7,000, of district about 42,000.

Giacomelli, HECTOR (1820-1904). French painter. Born in Paris, he early showed talent in draughtsmanship, and studied especially the drawing of birds, flowers, and insects, for his dainty pictures of which he later was famous. His illustrations to Michélet's *L'Oiseau*, 1867, and *L'Insecte*, 1876, were justly popular.

Giacosa, GIUSEPPE (1847-1906). Italian novelist and dramatist. He was born at Colletterto-Parella, in Piedmont. Classed among the romantic realists of the period, he wrote all forms of drama, in both prose and verse, the best known of his works being *Tristi Amori*, 1888; *Diritti dell'anima*, a comedy, 1894; *La Signora di Challant*; and *Il più Forte*, 1904. He was editor of the monthly *Lettura*.

Giant. Abnormally tall human being. The Greek word *gigas* denoted primarily manlike beings of monstrous size, either wholly mythical, such as Briareus, or reminiscent of traditional oversized races, such as Polyphemus. Similar Old Testament traditions attach to the Anakim and Rephaim, tall non-Semitic peoples who occupied Palestine before the Israelite immigration. Og, king of Bashan, and Goliath of Gath, who according to Josephus was 8 ft. 9 ins. high, were of Rephaim blood.

European folklore is much concerned with stories of giants such as Blunderbore and Grim. It attributed to their activities such natural formations as the Giant's Causeway and the Giant's Kettle, together with megalithic structures such as Dutch Hunnebedden.

Classical and medieval tradition have been brought to the touchstone of fact by measured records of giants in modern times. The tallest races, pre-eminently the Patagonians and the Galloway Scots, who are normally 5 ft. 10 ins., seldom reach 6 ft. 4 ins. The conventional limit of spectacular giantism is 7 ft. The Royal College of Surgeons in London possesses the skeleton, 7 ft. 9 ins. long, of O'Brien Charles Byrne, the 18th century Irish giant. His contemporary Patrick Cottar, whose skeleton was exhumed at Bristol in 1909, was shown to have been 7 ft. 10 ins.; the skeleton of Cornelius MacGrath, now in Dublin, is 7 ft. 9 ins. long. The tallest authentic measurement was the 9 ft. 3 ins. of the Russian Machnov;



Giant. A Russian giant in the U.S.A., 7 ft. 9 ins. in height

the same height was attributed to John Middleton, of Hale, Lancashire, who was introduced to James I in 1620. See Dwarf; consult also Giants and Dwarfs, E. J. Wood, 1868.

Giant's Causeway. Promontory of columnar basalt on the N. coast of co. Antrim, Ireland. It consists of some 40,000 closely packed polygonal pillars, the pentagonal and hexagonal formations largely predominating. The causeway is 2½ m. N.E. of Bushmills and is divided by "whin dykes" into three natural platforms known as the Little Causeway, the Middle or Honeycomb Causeway, and the Grand Causeway. The pillars have a varying diameter of from 15 to 20 ins., each consisting of several joints, concave and convex at the extremities, which fit perfectly into each other. The peculiar formation of the columns is generally ascribed to the cooling and cracking of the lava.

The neighbouring cliffs exhibit several remarkable features, such as the "Wishing Chair," the "Lady's Fan," the "Giant's Loom," and the "Giant's Organ," whose regular pillars present the appearance of organ pipes.

Giant's Kettle. Large hole found in the rock beds of former glaciers. A stream on the surface of the glacier descends a crevasse, wearing out a cavity or shaft, at

the base of which the Giant's Kettle is formed by the gyration of stones brought by the stream. These holes are often very deep.

Giant's Ring. Name applied to a prehistoric monument situated some five miles S.W. of Belfast, on the co. Down side of the river Lagan. It consists of a circular vallum measuring one-third of a mile in circumference, and averaging 15 ft. in height. Almost in the centre of the flat enclosure is a cromlech, or Druids' altar. The ancient name of this monument, and all traditions relating to it, are lost in antiquity.

In 1917 a careful investigation of the monument was carried out, under the superintendence of the Irish board of works, the custodians of the monument. It was found that under the cromlech the incinerated remains of apparently one human being had been buried in the soil without enclosure in an urn; the bones had been so much burned and decayed by age that no conclusions could be arrived at as to sex or age.

The monument is evidently the tomb of an exalted personage of the late stone age, possibly of about 2000 B.C. Near by many sepulchral remains have been found, mostly of the early bronze age.

Giao-Chi. Ancient people of Tibeto-Chinese stock in Indo-China. The name in Chinese means



Giant's Causeway. The Honeycomb Causeway, one of the most striking portions of the rocks

forked toes. This physical character, recorded in early Chinese annals, may have resulted from the riding stirrup being grasped between the first and second toes. Migrating southward across Tongking, their ethnic fusion with Chams and others produced the Annamese type and culture, a mixture of Mongoloid and Indonesian elements.

Giaour. Term applied by the Turks to all non-Mahomedans, especially Christians, and particularly to Indian-born Portuguese. It does not necessarily imply

contempt. The word, the English form of which is adapted from Italian *giavro*, is said to be a corruption of Arabic *Kyafir*, unbeliever. Byron's poem *The Giaour* appeared in 1813. *PRO. jowr.*

Giardino, GAETANO. Italian soldier. At the outbreak of the Great War he was chief of staff to



Gaetano Giardino,
Italian soldier

the 4th corps and was soon promoted major-general. His career at the front was successful and in June, 1917, he became corps commander, but the same month was appointed minister of war. In Feb., 1918, he was appointed to the supreme inter-allied council at Versailles, where he remained until April.

Giarre. Town of Sicily, in the prov. of Catania. It stands on the E. slope of Mt. Etna, 8 m. N. of Acireale and 40 m. by rly. S.W. of Messina, a junction for the rly. running W. One mile E. of the town is Riposto, its port, from whence it exports the wine for which it is celebrated. Pop. 21,611.

Giaveno. Town of Italy, in the prov. of Turin. It stands on the river Sangone, at an alt. of 1,660 ft., 17 m. by rly. W.S.W. of Turin, with which it is also connected by tramway. It has cotton and jute spinning mills and paper factories, while there is trade in coal, wood, fruit, mushrooms, potatoes, and wine. Pop. 11,756.

Gibara or JIBARA. City of Cuba. It is 80 m. N.W. of Santiago de Cuba, with which it has rly. connexion. It has a sheltered harbour protected by an old fort, and is the port for a large district producing maize, sugar, bananas, coconuts, tobacco, coffee, and timber. Pop. 6,175.

Gibb, SIR GEORGE STEGMANN (b. 1850). British rly. manager. The son of a civil engineer, he was born



Sir George Gibb,
British railway
manager
Russell

at Aberdeen, April 20, 1850. Educated at the grammar school and university there, he became a solicitor. In 1877 he joined the G.W.R. as assistant solicitor and in 1882 became solicitor at York to the N.E.R., of which in 1891 he was made manager. In 1906 he became managing director

of the Metropolitan District Rly. and the allied Underground Electric Rlys. Co. of London. His next move was to the Road Board, of which he became chairman in 1910. In 1919 he resigned, and was made consulting general manager of the N.E.R.

Gibbet (Fr. *gibet*, crooked stick). Type of gallows having a projecting bar, and used principally for hanging malefactors in chains as a warning to passers-by, hence the term "to gibbet." These gibbets or gallows were at one time very common, and the name still survives in Gallows Hill. *See* Gallows; Hanging.

Gibbon (*Hyllobates*). Smallest of the anthropoid or man-like apes. Rarely more than 3 ft. high, it is readily distinguished from the other anthropoids—the gorilla, the chimpanzee, and the orangutan—by its small slender build, its remarkably long arms, and by small naked callosities on the buttocks. It is the only anthropoid that walks on its hind legs without difficulty, either balancing itself by holding its long arms outstretched or by clasping its hands behind the neck.

There are several species, all of them found in Malay and the surrounding countries. In colour they vary from black to grey, and some individuals tend to become lighter as they grow older. They live in the trees, and are by far the most agile of the anthropoids, leaping through the air with such speed as to catch birds on the



Gibbon. Specimen of the Silver Gibbon
Gambier Bolton, F.Z.S.

wing. Their food consists of fruit and young shoots, insects, and the eggs and nestlings of birds. In the forests they are extremely noisy, uttering mournful cries in the morning and evening. In cap-

tivity they are gentle and easily tamed, and have been known to change colour. *See* Monkey.

Gibbon, EDWARD (1737-94). English historian. The eldest son of Edward Gibbon, an M.P. in the time of Sir Robert Walpole, he was born at Putney, April 27, 1737. Both his grandfathers were merchants in London, and he was brought up in surroundings of comfort and ease. At seven he had a private tutor, at nine he went to a school at Kingston, and at eleven he went to Westminster. There he learned a good deal, but he owed more to an aunt, Catherine Porten, who took charge of him after his mother's death in 1747.

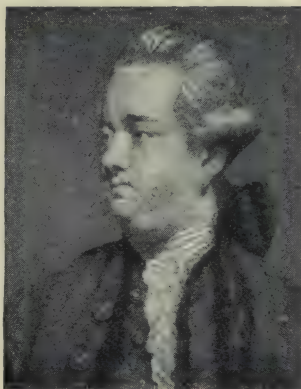
In 1752, after two years spent under tutors, for his health was not equal to the regular life of Westminster, he went to Oxford, entering Magdalen College; but his knowledge was of an unusual kind, and he did not trouble to turn his abilities into the conventional channels. He occupied himself mainly with gaieties, and pronounced his period of residence wholly unprofitable, but in 1753 he joined the Roman Church. His angered father took him away from Oxford and sent him to Lausanne, where for five years he lived with a Calvinist pastor. There he read widely and steadily, his retentive memory serving him well. In 1758 he returned to England, and lived for a time at his father's house at Buriton in Hampshire. In 1761 he published in French his first book, *An Essay on the Study of Literature*. In 1763 he set out upon a tour of Europe. Part of his time was passed in Italy, and in Rome the idea of the *Decline and Fall* came to him.

In 1765 Gibbon returned home from Italy, and during the next five years he wrote on miscellaneous subjects. He kept his great idea, however, constantly in mind, but he did not actually begin work on it until, after his father's death in 1770, he moved from Buriton to London. In 1772 he began to write, and in Feb., 1776, the first volume of the *Decline and Fall* was published. It was an instant and complete success, and he continued, pausing only in 1779 to reply, in a *Vindication*, to those who had criticised chapters 15 and 16 on Christianity. In 1774 he had been returned to the House of Commons for Liskeard, and in 1780 he was returned for Lymington. In 1783, having resigned his seat, he joined a Swiss friend, Georges Deyverdun, at Lausanne, and there he lived until 1793. The earlier part of this time he spent on his history, which he finished on

June 27, 1787. The last three volumes were published in 1788.

Again in England, Gibbon spent some time in Sussex with his friend Lord Sheffield, but he was in London for an operation when he died Jan. 16, 1794. His remains were buried at Fletching, Sussex. Gibbon was never married. At Lausanne, in 1757, he became engaged to Susan Curchod, afterwards the wife of Necker; but his father forbade the match, and, as he says, "I sighed as a lover, I obeyed as a son." In addition to the *Decline and Fall*, Gibbon wrote an *Autobiography*.

Gibbon may be described as the greatest of modern historians. Ranke and probably Acton knew more; Ranke and Lecky wrote more; but when the qualities of the ideal historian are estimated, Gibbon excels them all. To knowledge, industry, and judgement he added an English style which can only be compared with that of Burke, and a power of generalisation that amounts to genius. His acquaintance with the literature of his subject was amazing even when his years of steady reading are remembered. On the other hand, it must be said that the latter part of his history has certain faults; it is a sketch, unequal to the earlier part both in knowledge, accuracy, and a sense of proportion, while later research has shown



Perceval Gibbon,
British novelist
Miss Gregory, 1911; Margaret
Harding, 1912; Those Who
Smiled, 1920.

Gibbons, GRINLING (1648-1720). English carver and sculptor. Born at Rotterdam, April 4,



Grinling Gibbons,
English carver
After Kneller

1648, of Dutch parentage, he practised his art in England, where he came as a boy, and is usually classed with the English school. John Evelyn, struck by his carving, 1671,

of Tintoretto's Crucifixion, obtained the patronage of Sir Christopher Wren for Gibbons, whose carved decorations in St. Paul's (the choir stalls) and other Wren churches are noteworthy.

Other fine works are at Blenheim Palace, Chatsworth, Petworth, Belton House (Grantham),

his point of view in one or two instances to be distinctly wrong.

A. W. Holland

Gibbon

After
Sir Joshua Reynolds

Gibbon, PERCEVAL (b. 1879). British novelist. Born at Trelech, Carmarthenshire, Nov. 4, 1879, eldest son of the Rev. J. Morgan Gibbon, the Congregationalist minister, he travelled in Africa, and published his first volume, *African Items*, a collection of verse, in 1904. Turning to fiction, he wrote effective short stories. He served as war correspondent for



Grinling Gibbons. Carving, with detail of game, birds, and fruit, in the western recess of the State ante-room, Windsor Castle, 1877-78. This room was originally the "King's Eating Room"

Gatton, and other great houses; and there is a throne carved by him at Canterbury. He carved foliage, fruit, and floral designs with extraordinary delicacy, and produced also several statues of merit, including those of Charles II at Chelsea Hospital and the Royal Exchange, and one of James II at Whitehall. He died Aug. 3, 1720, and is buried in S. Paul's, Covent Garden, London. See James II, illus.

Gibbons, JAMES (1834-1921). American cardinal. Born July 23, 1834, at Baltimore, he entered the Roman Catholic priesthood, 1861, and in 1872 was appointed bishop of Richmond. In 1877 he became archbishop of Baltimore and



primate of the U.S.A., and was made cardinal by Leo XIII in 1886. His chief work, *The Faith of Our Fathers*, 1871, has had a wide circulation in Britain and America. He was prominent in the foundation of the Catholic university of America at Washington, 1884. He died Mar. 25, 1921.

Gibbons, ORLANDO (1583-1625). English composer. Born at Cambridge, he was the most distinguished of three brothers, all musicians, sons of William Gibbons, one of the town musicians or waits. First a chorister at King's College, Cambridge, he made his reputation by composing a fantasia. In 1604 he was appointed organist of the Chapel Royal, London, and in 1623 of Westminster Abbey. His compositions, which include much church music, madrigals and instrumental music, place him amongst the greatest of early English composers. He died of apoplexy at Canterbury, June 5, 1625, whither he had gone to produce his music for the wedding reception of Henrietta Maria by Charles I. His son Christopher (1615-76) was successively organist of Winchester Cathedral and Westminster Abbey.



Orlando Gibbons,
English composer
From an old print

Gibbs, JAMES (1682-1754). British architect. Born at Aberdeen, Dec. 23, 1682, he studied at Rome under Carlo Fontana. Coming to London in 1709, he designed and built S. Mary-le-Strand, 1714-22,

and added the steeple to Wren's church of S. Clement Danes, 1719. The church of S. Martin-in-the-Fields, his masterpiece, was built between 1722-26, and other noted works were the Radcliffe Library, Oxford, 1737-47; S. Peter's, Vere Street, 1721; and All Hallows',



James Gibbs,
British architect

After Hogarth

Derby, 1723-25. The friend and disciple of Wren, Gibbs's buildings are finely proportioned, and not too slavishly faithful to the classic models. He died at Aberdeen, Aug. 5, 1754.

Gibbs, SIR PHILIP HAMILTON (b. 1877). British author and war correspondent. After editing some

magazines, he held editorial appointments on *The Daily Mail* and *The Tribune* before being attached to *The Daily Chronicle* as special correspondent and descriptive writer. He acted as war correspondent with the Bulgarian army in 1912, with the French and Belgian armies in 1914, and with the British armies in the field from 1915 to the end of the Great War. His works include memoirs, essays, and fiction. The notable *Fleet Street* novel, *The Street of Adventure*, was based on his own experiences, 1906-8. *The Soul of the War*, 1915; *Battles of the Somme*, from Bapaume to Passchendaele, 1917; *Open Warfare*, 1919; *Realities of War*, 1920, give vivid pictures of the Western front. In 1920 he was made K.B.E. In 1921-22 he was editor of *The Review of Reviews*.

Gibeah (Heb., hill). Name of several places in the O.T. The most important was Gibeah of Benjamin, or Gibeah of Saul, which stood a little N. of Jerusalem, and was the home of Saul. The site is now marked by an artificial mound.

Gibeon. Ancient Hivite city, now known as El-Jib. It is 5 m. N.W. of Jerusalem. It was here that Joshua overcame five kings of the Amorites, and here later the great fight took place between the followers of David and those of Ishbosheth. Here too Amasa was murdered by Joab, and here Solomon offered sacrifice and obtained the gift of wisdom.

Gibeon. Township of the S.W. Africa Protectorate. It is situated in the valley of the Fish River a few miles from the main North-South Rly., and is the centre of an agricultural district. Pop. 3,500, of whom about 900 are Europeans.

Gibraltar (anc. Calpē). Town and rock fortress at the S. extremity of Spain, a British possession.

The rock juts out into the Mediterranean as an attenuated peninsula, terminating in Europa Point. The town is divided into two sections—the North Town and the South Town. The North Town is the meaner part of Gibraltar, with narrow and crooked streets.

The principal buildings are the Anglican cathedral of the Holy Trinity, built in Moorish style, and consecrated in 1832; the church of the Sacred Heart of Jesus; the castle, built by the Moors, and the governor's residence.

Gibraltar is connected with the mainland by an isthmus, $1\frac{1}{2}$ m. long, and $\frac{1}{2}$ m. broad. Between the British Lines and the Spanish Lines is a tract of neutral uninhabited ground. Just S. of the British Lines there are rifle ranges, a racecourse, and cemeteries. The newly constructed mole on Gibraltar Bay affords secure anchorage for the largest vessels. The haven is adequately sheltered from the dangerous E.

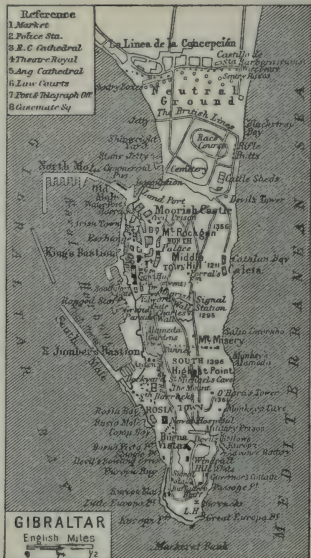


Gibraltar arms



Sir Philip Gibbs,
British journalist

Russell



Gibraltar. Map of the rock and harbour with the Spanish Lines to Europa Point

wind, or Levanter. The town is of great importance as a coaling station. The harbour, of 260 acres, can accommodate the Mediterranean fleet. The population of the permanent civilians is estimated at 17,943. The Rock of Gibraltar and Mount Abyla on the African coast were known to the ancients as the Pillars of Hercules. An executive council on which non-official inhabitants are represented was formed in 1922.

Gibraltar, SIEGES OF. Military operations conducted by the British, the Spaniards, and others. A large number of sieges of this dominant rock are recorded before the appearance of the British in 1704. It was taken by the Moors in 711, and they were deprived of it by the Castilians in 1309. The Moors soon recovered it and held it against several attempts made by the Christians. The latter, however, recovered it in 1462, and the next sieges were due to the desire of one Spaniard to oust another from it.

In July, 1704, a British and Dutch fleet under Sir George Rooke, with an army of 30,000 men on board, was sent against Cadiz. At the last minute Gibraltar was substituted for Cadiz, and on July 22 the fleet appeared in the bay. Some marines were landed and the place was bombarded for six hours; at the end of that time the garrison, under 500 men, offered to surrender.

Gibraltar thus became British, July 24, 1704 (O.S.). It cost 61 men killed and 252 wounded.

In the autumn of 1704 the Spaniards, aided by their French allies, began an attempt to recover the fortress. This siege lasted until April, 1705, and was



Gibraltar. Map of the strait which separates Europe from North Africa

marked by a daring attempt to surprise the place, and by several naval encounters. In 1736 the Spaniards tried again, but with equal success, and then came the siege of 1779-83.

Gibraltar at this time was defended by Sir G. A. Elliott, afterwards Lord Heathfield. The French and Spanish fleet got into the bay and the blockade began.

fleet got in with supplies. A terrific bombardment was then tried, but the defenders stuck to their guns

The fortress was assailed also by land, and extensive siege works were constructed. A good deal of damage was done by the besiegers, while British ships from time to time succeeded in attacking the enemy. However, the garrison was in great straits when, in June, 1780, Rodney got provisions through.

Again, however, provisions ran short, but in April, 1781, a British



and in Nov. they partially destroyed the siege works by a sortie. The final attack was made in Sept., 1782. An army of 40,000 men were collected, while off the bay was a strong French and Spanish fleet. Floating batteries were built, and from sea and land a continuous and heavy bombardment was maintained, to which Elliott replied with red-hot shot. On the 13th the attack was



Gibraltar. 1. General view of the Rock from Spain. 2. Governor's residence at Europa Point. 3. The signal station. 4. The North Town

pressed desperately, but the battering ships at length were set on fire and great loss was inflicted upon the attacking force. On Feb. 6, 1783, the siege was raised. See A History of the Siege of Gibraltar, John Drinkwater, new ed., 1905.

Gibraltar, STRAIT OF. Channel separating the S. of Spain from the N. of Africa, and leading from the Atlantic to the Mediterranean. It has a surface current, which flows from the Atlantic, and an underlying current, which flows from the Mediterranean. At its narrowest point the strait is nearly 9 m. wide; its length from E. to W. is about 35 m.

Gibraltar Fever. Infectious disease caused by a micro-organism, usually conveyed by goat's milk. See Malta Fever.

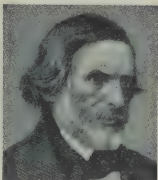
Gibson, CHARLES DANA (b. 1867). American draughtsman and painter. Born at Roxbury,



Chas. Dana Gibson,
American painter

Massachusetts, Sept. 14, 1867, he studied in New York, and Paris. He began as a draughtsman in black and white for the chief periodicals and magazines, and made a great hit by introducing the American girl to illustrated literature. His type of female beauty was much admired, and was specifically named "The Gibson Girl." Later he took up portraiture. Among his books may be mentioned Drawings, 1894; London, 1896; Pictures of People, 1896; Sketches and Cartoons, 1898; The Education of Mr. Pipp, 1899; The Americans, 1900; and The Social Ladder, 1902.

Gibson, JOHN (1790-1866). Welsh sculptor. Born at Gyffin, near Conway. While a mere lad his parents removed to Liverpool, where he acquired great facility in wood carving and statuary. In 1816 he exhibited his first piece at the Royal Academy, and then he made his home in Rome, where he studied under Canova and Thorwaldsen. His Roman works include: Mars and Cupid, Psyche and Zephyrus, Sleeping Shepherd Boy, Nymph Untying Her Sandal, Cupid Disguised as a Shepherd, and Hunter and Dog.



John Gibson,
Welsh sculptor



Charles Dana Gibson. An illustration from The Education of Mr. Pipp. The *nouveaux riche*, taken to a concert by his wife and daughters, typical Gibson girls, fails to take any friendly interest in the great composers

In 1833 he was elected A.R.A., and in 1838 R.A. He revisited England in 1844, and returned periodically. To these years belong his famous Tinted Venus, for he was an advocate of the ancient Greek practice of introducing colour into sculpture. He died in Rome, Jan. 27, 1866, leaving the contents of his studio and the bulk of his fortune to the Royal Academy, which founded the Gibson Gallery (*q.v.*).

Gibson, MARGARET DUNLOP (d. 1920). British scholar. The

younger twin daughter of John Smith, of Irvine, Ayrshire, she was educated chiefly by private tuition. In 1883 she married the Rev. James Gibson, translator of Cervantes poetry. Both she and her sister, Mrs. Agnes Lewis, paid a number of visits to Syria and Palestine. In 1892, when at the convent on Mt. Sinai, they photographed the Syriac palimpsest of the Gospels, and in 1896 brought to England the first leaf of the Hebrew Ecclesiasticus. Mrs. Gibson was a warm supporter of the Presbyterian Church of England, and with her sister presented the site for Westminster Theological College, Cambridge. Her works include How the Codex was found, Studia Sinaitica, Apocrypha Arabica, Didascalia Apostolorum, and Commentaries on Acts. She died Jan. 11, 1920.

Gibson, THOMAS MILNER (1806-84). British politician. Born at Trinidad, he was educated at Charterhouse and Trinity College, Cambridge. He entered parliament as Conservative member for Ipswich in 1837, and resigned in 1839 on turn-



Margaret D. Gibson,
British scholar
Elliot & Fry

ing Liberal. As a prominent anti-Corn Law worker, he was returned for Manchester in 1841. He was vice-president of the board of trade in 1846, and president from 1859-66. Gibson helped to secure the abolition of the advertisement duty in 1853, the newspaper stamp in 1855, and the duty on paper in 1861. A keen yachtsman, he was the last to cruise in the Mediterranean with a free pass from the dey of Algiers. He died at Algiers, Feb. 25, 1884.

Gibson Gallery. Hall in Burlington House, Piccadilly, London. The exhibits comprise the original sketches and casts of the chief works of John Gibson (*q.v.*), and examples of his marble sculpture bequeathed to the Royal Academy.

Gichtel, JOHANN GEORG (1638-1710). German mystic. Born at Ratisbon, March 14, 1638, he studied theology and Oriental languages at Strasbourg. For some years he practised as a lawyer, and in 1665 was banished for attacking the Lutheran doctrine of justification by faith. Three years later he settled at Amsterdam, where he founded the celibate sect of Angelic Brethren, who aimed at a life of angelic purity. He died Jan. 21, 1710.

Giddiness OR VERTIGO (Lat. *vertere*, to turn). Sensation of lack of balance; when marked, associated with reeling or staggering of the body. Giddiness may be experienced by persons in normal health after rapid rotation of the body, as in waltzing; by stepping on an insecure surface, as that of boggy turf; and by looking down a vertical height. The commonest pathological cause is some disorder of the ear, which may be simply wax in the external ear, or more deep-seated disease.

Giddiness is also a symptom of many affections of the brain, such as cerebral haemorrhage, tumours, and atheromatous degeneration of

the arteries. The action of various poisons in producing giddiness is illustrated by the excessive use of alcohol or tobacco. Paralysis of certain muscles of the eye, with dull vision, is another cause. The aura or premonitory indication of an epileptic fit frequently takes the form of giddiness.

Gidea Park. Garden suburb of Romford, Essex, England. It is 13½ m. E. by N. of London, with a station, between Romford and Harold Wood, on the G.E.R. Originally a subordinate manor of Romford, Gidea (Giddy, Gedy, or Gwyddy) is said to have belonged to the abbey of Westminster. Sir Thomas Cooke, lord mayor of London, obtained a licence in 1467 to enclose a park and build a fortified mansion, but Gidea Hall was completed by his grandson, Sir Anthony Cooke, who here entertained Queen Elizabeth in 1568. The estate came eventually into the possession of Sir Francis Eyles, who built a second Gidea Hall on the site of the old one in 1700.

The estate was acquired by Sir H. H. Raphael, Bart., in 1910, as a preliminary step to developing it on garden city lines. About 80 acres, with lake and wooded land adjoining, given by Sir Herbert to Romford, is now known as Raphael Park. By 1920, 200 houses, each built from different plans and elevations, had been erected. There was a military training camp here during the Great War. See Romford.

Gideon. Hebrew judge and warrior. The son of Joash, he appears to have been born at Ophrah in Manasseh. Called by God to deliver Israel from the Midianites, he overthrew the altars and groves of Baal. By an ingenious night alarm he threw the Midianite army into confusion and routed it. He refused the throne, but judged Israel for about 40 years, and is said to have had 70 sons. The obscure and partly inconsistent O.T. account of him (Judges 6-8) probably consists of two or more traditions unskilfully combined by a late editor.

Gien. Town of France, in the dept. of Loiret. It stands on the right bank of the Loire, 40 m. E.S.E. of Orleans. An old place, its interest is mainly antiquarian. It has some old houses, a 15th century bridge across the Loire, and a château, now used as a palais de justice. In the town is a gigantic statue of the Gallic chief Vercingetorix. Pop. 8,000.

Gierke, Otto Friedrich (b. 1841). German jurist. Born at Stettin, Gierke studied at Heidelberg and Berlin, and afterwards lectured on law. After holding uni-

versity positions at Stettin and Berlin he became professor of German law at Breslau in 1872. In

1884 he was transferred to Heidelberg, and in 1887 to Berlin. Of Gierke's writings the most important is his *German Society Law* (*Genossenschaftsrecht*), 1887. In this and other books he developed the idea that groups within the state, guilds and the like, have their own bodies of law, their own personality and, consequently, their own rights.

Giers, Nicholas Karlovitch DE (1820-95). Russian statesman. Born May 21, 1820, he entered the diplomatic service. Having gained experience at home, he was appointed minister plenipotentiary to Persia in 1863. After holding similar posts at Bern and Stockholm, he became foreign minister in 1882. A strong advocate for peace, he succeeded in maintaining friendly relations with all European powers. He died on Jan. 26, 1895.

Giesebrecht, Wilhelm von (1814-89). German historian. Born in Berlin, March 5, 1814, he became one of Ranke's pupils, and before 1840 published his first historical work, a monograph on Otto II. In 1857 he was made professor of history at Königsberg, and in 1862 at Munich, where he died Dec. 17, 1889. Giesebrecht's main contribution to history is his unfinished *History of the Empire (Kaiserzeit)*, 1881-90, a study of the medieval empire to the time of Frederick I. It is an exact piece of scholarship. His other works include a translation of the *History of Gregory of Tours*, 1851.

Giessen.

Town of Hesse, Germany. Situated on the Lahn, it is 34 m. N. of Frankfurt. The chief building is the university, founded 1607, with a library at the present day of 200,000 volumes and MSS. New buildings were erected in 1889. In the chemical laboratory Liebig, who was professor here, 1824-52,

carried out many of his experiments. The botanic garden of the university dates from 1609. The industries include iron-foundries, machine shops, weaving sheds, chemical works, etc. During the Great War there was a prisoner-of-war camp at Giessen. Pop. 31,153.

Giffen, Sir Robert (1837-1910). British economist. Born at Strathaven, Lanarkshire, July 22, 1837, after serving in a lawyer's office he took to journalism, being connected with *The Stirling Journal*. In 1862 he moved to London, where his first appointment was on *The Globe*. He was assistant to Lord Morley on *The Fortnightly Review*, but found his real *métier* as assistant to Bagehot on *The Economist*.

In 1876, having been for a short time city editor of *The Daily News* and then of *The Times*, Giffen entered the civil service as head of the statistical department of the board of trade. There he remained until 1897, having been controller-general of its commercial, labour, and statistical departments during fifteen years. In 1895 he was knighted, and he died April 12, 1910. Giffen was a recognized authority on statistical and financial matters, and his works include *The Growth of Capital*, 1890; *Economic Enquiries and Studies*, 1904.

Gifford, William (1756-1826). British writer and controversialist. Son of a glazier, he was born at Ashburton, Devonshire, and, left an orphan at the age of twelve, became first a cabin boy on a coasting steamer, and then apprentice to a shoemaker. Devoting his spare time to the study of mathematics



Otto Gierke,
German jurist



Sir Robert Giffen,
British economist



Giessen, Germany. The Liebig Museum, used as a laboratory by J. Liebig from 1824-52

and verse writing, he attracted the notice of a surgeon named Cookesley, who raised a fund on his behalf, with the result that after two years' schooling he was sent to Exeter College, Oxford, after which he travelled on the Continent.



William Gifford,
British writer
After Hopper

Settling in London on his return to England, he published in 1794 and 1795 two satires, *The Baviad*, a paraphrase of the first satire of Persius, which suppressed the Della Cruscanes (*q.v.*), and *The Maeviad*, an imitation of Horace directed against the corruptions of the drama. He edited *The Anti-Jacobin*, 1797-98, so much to the satisfaction of the Tories that he was given two government appointments worth together £900 a year. His *Epistle to Peter Pindar* (Dr. Walcot), 1800, a bitter piece of invective, was followed by his *Autobiography* and a verse translation of Juvenal, which still, with that of Persius, 1821, remains unrivalled in vigour.

As editor of *The Quarterly Review*, 1809-24, he attacked Keats, Hazlitt, and what was known as the Cockney School of Poetry. He edited the dramatic works of Massinger, 1805-13, Ben Jonson, 1816, and Ford, 1827. He died in Pimlico, Dec. 31, 1826, and was buried in Westminster Abbey.

Gifford Lectures. Course of lectures on natural theology, in connexion with the universities of Edinburgh, Glasgow, Aberdeen, and St. Andrews. It was founded by Lord Gifford (1820-87), Scottish judge and philanthropist. After studying at Edinburgh, he was called to the bar in 1849 and became sheriff of Orkney and Shetland and a judge of the court of session. He left the sum of £80,000 between the Scottish universities for the establishment of the lectureships, which are exempt from any dogmatic test. The lecturers have included Max Müller, Andrew Lang, and William James.

Gift. In English law, the promise to make a gift, except by deed, is not enforceable. But once the gift is completed, it is irrevocable unless it has been obtained by duress, fraud, or undue influence. A gift is only complete when every legal

step has been taken to pass the property to the donee. For example, "I give you my watch, or this freehold house," are useless unless the watch is handed over or the freehold conveyed by deed.

Gifu. Town of Japan, on the island of Honshu. It is the capital of the Gifu prefecture, 70 m. E.N.E. of Kioto. Pop. 55,700 See Earthquake.

Gig. Word suggesting lightness and speed applied to a two-wheeled vehicle drawn by one horse. It is also used of a clinker-built racing boat, and of a narrow ship's boat propelled either by oars or sails. See Carriage.

Gigantes. In Greek mythology, a race of giants who sprang from the blood of Uranus as it fell to the earth when he was mutilated by Cronos. The chief of the Gigantes were Alcioneus, Enceladus, and Porphyrion. According to some accounts they engaged in war with Zeus and attempted to storm Olympus. They were ultimately defeated by Zeus with the help of Hercules, and some of them were buried under volcanoes. This legend, however, seems to confound the Gigantes with the Titans (*q.v.*).

Giggleswick.

Parish and village of Yorkshire (W.R.), England. It stands on the Ribbles, 14 m. N.W. of Skipton, and has a station on the Mid. Rly. In the neighbourhood are stone and slate quarries. It is known for its large public school. Founded in 1512, this received a charter from Edward VI in 1553, and in 1910 a new scheme for its management was put in force. The school has five houses with accommodation for over 200 boys. Pop. 946.

Gijón (anc. *Gigia*). Seaport of Spain, in the prov. of Oviedo. It stands on the Bay of Biscay, 11 m. N.N.E. of Oviedo, at the terminus of various Asturian rlys., about midway between the ports of Bilbao and Corunna. It has a

commodious harbour, with quays, arsenal, a curious 15th century church, palace, and the Jovellanos Institute with a fine art collection. The town retains its medieval walls and quaint houses.

Among the exports are minerals, fish, nuts, fruit, butter, and cheese, while glass, liqueurs, tobacco, soap, chocolate, and tinned goods are manufactured. The Moors rebuilt the fortifications with stones from the Roman city. Gijón repelled the Normans in 844, was burnt down in 1395, but is now a prosperous town and popular seaside resort. Pop. 52,226.

Gila. River of the U.S.A. Rising in New Mexico on the slopes of the Sierra Madre, it flows S. and W. through Arizona, and enters the Colorado near the Mexican border. For upwards of half its course of about 480 m. it passes through mountainous country, and in places precipitous cañons render the river impossible of approach.

Gila Monster. Popular name for the heloderm, the only venomous lizard known. It is common in Texas and Mexico, and



Gijón, Spain. The Pescaderia road in the old town, beside the harbour

lurks in ruins and old buildings, where it feeds upon frogs, eggs, and insects. Its bite is not fatal to man, though it produces very injurious effects.

Gilbert. River of Queensland, Australia. It rises near the Gregory Range, about 20 m. S. of Gilberton, and flows N.W. to the Gulf of Carpentaria after a course of 230 m.

Gilbert. Group of small islands and atolls in the Pacific Ocean. They lie on the equator, between long. 171° and 177° E., S.E. of the Marshall Islands. The chief are Butaritari, Makin, Abaian, Marakei, Tarawa, Maiana, Kuria, Abemama, Ananuka, Tapiteuca, Nonouti, Nikunau, Onotao, Beru, Tamana, Arorae and Ocean Islands. Total area, 166 sq. m. Eighteen islands are inhabited; they yield pandanus fruit and coconuts, and export copra and phosphates.



Gig of British admiral, manned by naval officers
S. Cridd, Southsea

Proclaimed a protectorate in 1892, they were annexed by Great Britain, at the request of the natives, on Nov. 10, 1915, and now form part of the Gilbert and Ellice Island Colony. The islands are administered by a resident commissioner, who is responsible to the high commissioner for the Pacific. Pop. 26,417 natives; 446 foreigners.

Gilbert (c. 1110-89). English saint and founder of the Gilbertines. He was born at Sempringham, Lincolnshire, of which he became rector, and where he founded his Order in 1135. He was imprisoned on a false charge of sending help to S. Thomas Becket when in exile. He died at Sempringham, and was canonized by Pope Innocent III. See Gilbertines.

Gilbert, ALFRED (b. 1854). British sculptor. Born in London, Aug. 12, 1854, he studied at



Alfred Gilbert,
British sculptor
Elliott & Fry

Heatherley's School of Art, working for a year in J. E. Boehm's studio, and at the École des Beaux Arts under Cavalier. In 1882 he exhibited at the Royal Academy his first serious composition, *The Kiss of Victory*. Proceeding to Rome, where he fell under the influence of the Italian Renaissance, he produced *Perseus Arming*. This was followed by *Icarus*, 1884, *The Enchanted Chair*, 1886, *The Shaftesbury Fountain* in Piccadilly Circus, *Comedy and Tragedy*, 1892, the *Duke of Clarence Memorial* at Windsor, statues of *Queen Victoria* at Winchester, and many busts. He was chosen R.A. in 1892, and retired in 1909. He was professor of sculpture at the Academy, 1900-9. His early work was distinguished by Grecian simplicity and grace, but became more decorative.

Gilbert, SIR HUMPHREY (c. 1539-83). English navigator. Born at Dartmouth, he



Sir Humphrey
Gilbert,
English navigator

given command of the prov. of Munster in 1569. Knighted in 1570

and M.P. for Plymouth in 1571, he was sent the following year to the Netherlands, where he failed against the Spaniards.

After this failure he retired to his house in Limehouse, where he mostly resided, until 1583, when with two vessels he sailed to Newfoundland, landed at St. John's, and founded the first English colony in America. He insisted on setting out on the return voyage aboard the smaller of his two vessels, the *Squirrel*, a frigate of only 10 tons. The little craft foundered off the Azores with all hands, Sept. 9, 1583.



Alfred Gilbert. His beautiful statue of *Icarus*, exhibited at the Royal Academy, 1884

Fred. Hollyer

Gilbert, SIR JOHN (1817-97). British painter and illustrator. Born at Blackheath, July 21, 1817, he entered a city office. Finding the life intolerable, after two years he abandoned business for art. He was almost entirely self-taught. From 1836 onwards he exhibited at the British Institution, Royal Academy, and other galleries, although between 1851 and 1867 he only showed at the Academy a

solitary picture (1867). His real *métier* was the illustration of books and periodicals, in which he displayed an astonishing fecundity and versatility.

His drawings (829 in all) for Howard Staunton's edition of Shakespeare (1856-60) became deservedly famous, and a complete set of the proofs found an appropriate home in the print-room of the British Museum. Sir Walter Scott and Cervantes he also illustrated with extreme felicity, and for nearly thirty years he was the mainstay of *The Illustrated London News*.

In 1852 he became associate and in 1854 full member of the Royal Society of Painters in Watercolour, being elected its president in 1871, when he received a knighthood. He was elected A.R.A. in 1872, and R.A. in 1876. His preference of subjects was still governed by his old relish for literature and history, among his best works in oils being *King Charles Leaving Westminster Hall* (1872), *Naseby* (1873), *Richard II Resigning the Crown to Bolingbroke* (1876), and *The Doge and Senators of Venice*. Sir John is exceptionally well represented in the Guildhall Gallery, London, and was presented with the freedom of the City. He died at Blackheath, Oct. 5, 1897. See *Agincourt*; *Charles I.*

Gilbert, SIR JOSEPH HENRY (1817-1901). British chemist. Born at Hull, Aug. 1, 1817, he studied chemistry at London and then under Liebig at Giessen. From 1843 until his death he was director of Rothamsted Laboratory in collaboration with Sir J. B. Lawes. He was elected F.R.S. in 1860, and was knighted in 1893, on the jubilee of the Rothamsted experiments. These covered a large and important field of research. Gilbert died Dec. 13, 1901.

Gilbert, MARIE DOLORES ELIZA ROSANNA (1818-61). Irish dancer, better known by her stage name of *Lola Montez* (q.v.).

Gilbert, SIR WILLIAM SCHWENK (1836-1911). British dramatist. Born in London, Nov. 18, 1836, he was educated at London University. From 1857-61 he was a clerk in the education department of the privy council office, and in 1863 was called to the bar. From 1861-71 he contributed articles and drawings to *Fun*, in which his *Bab Ballads*, 1869 and 1873, appeared,



John Gilbert

and he started his career as dramatist by writing half a dozen burlesques, including a travesty of



Sir W. S. Gilbert,
British dramatist
Russell

Tennyson's *The Princess*. These were followed by three fairy plays, *The Palace of Truth*, 1870, *The Wicked World*, 1873, and *Broken Hearts*, 1875; a classical romance, *Pygmalion and Galatea*, 1871; and two farcical comedies, *Tom Cobb*, 1875, and *Engaged*, 1877. He also wrote plays of serious interest, such as *Dan'l Druce*, 1876; *Gretchen*, 1879; *Comedy and Tragedy*, 1884; and *Brantingham Hall*, 1888.

The remarkable series of operas, in the production of which he was associated with Arthur Sullivan as music composer and Richard D'Oyly Carte as theatrical manager, started at *The Royalty with Trial By Jury*, 1875, and was continued at the *Opéra Comique* by *The Sorcerer*, 1877, *H.M.S. Pinafore*, 1878, *The Pirates of Penzance*, 1880, and *Patience*, 1881, and at *The Savoy* by *Iolanthe*, 1882, *Princess Ida*, 1884, *The Mikado*, 1885, *Ruddigore*, 1887, *The Yeoman of the Guard*, 1888, *The Gondoliers*, 1889, *Utopia Limited*, 1893, and *The Grand Duke*, 1896. The wit and finish of his dialogue and lyrics, the urbanity of his satire, and the topsy-turvydom of his humour probably contributed as much to the success of *The Savoy* operas as the grace and charm of Sullivan's music. Gilbert, who was knighted in 1907, died May 29, 1911, and was buried at Edgware.

Gilbert Blane Medal. Naval prize. It was founded in 1829 by Sir Gilbert Blane, a member of the



Gilbert Blane Medal. Reverse and obverse sides of the naval prize medal

board for Sick and Wounded Seamen, to encourage the study of medicine in the navy. It consists of a gold medal presented biennially to each of the two medical officers who produce the most approved daily journals of their practice whilst in charge of a ship of war in the Royal Navy.

Gilbertines. English monastic order. It was founded by S. Gilbert of Sempringham (*q.v.*) about 1155. The order included both men and women, who lived in double monasteries having no communication. The men followed the Augustinian rule and the women the Cistercian. The habit was black, covered with a white cloak. S. Gilbert established 13 houses, containing some 700 canons and 1,500 nuns. The superior was called the master or prior general. See *Abbey*; *Monasticism*.

Gilbey, Sir Walter (1831-1914). British merchant. Born at Bishop's Stortford, May 2, 1831, as



Sir Walter Gilbey,
British merchant
Elliott & Fry

a youth he was in the office of an estate agent. During the Crimean War he served in the army pay department at the front, and on his return to England he founded, with one of his brothers, the firm of W. & A. Gilbey, wine merchants. In 1893 Gilbey was made a baronet and the title passed to his son on his death, Nov. 12, 1914. Gilbey was a sportsman and an agriculturist, writing books on both subjects. In 1895 he was president of the Royal Agricultural Society, and from 1889-1904 of the Hackney Horse Society. His numerous publications include *Riding and Driving Horses*, 1901, and *Hounds in the Old Days*, 1913.

Gilboa (bubbling fountain). Chain of hills beside the plain of Esdraelon. Saul and his sons were slain in battle here.

Gildas (c. 516-570). British historian. His work, *Liber querulus de excidio Britanniae*, or *Lament over the Destruction of Britain*, traces the history of Britain from the Roman invasion to the writer's own time, and has slight literary and doubtful historical value. He is known also as a Breton saint, two monasteries having been founded in his honour in Brittany.

Gildea, Sir James (1838-1920). British philanthropist. Born at Kilmaine, co. Mayo, Ireland,

June 24, 1838, third son of the Very Rev. G. R. Gildea, provost of Tuam, he was educated at S. Columba's College, near Dublin, and Pembroke College, Cam-



Sir James Gildea,
British philanthropist
Russell

bridge. He served in a civilian capacity at the War Office, 1857-62; was colonel commanding 6th Royal Warwickshire Regt., 1890-98; and from 1909 hon. colonel of the 4th (Special Reserve) Battalion. From the time of the Franco-Prussian War, when he joined the committee of the National Society for Aid to the Sick and Wounded in War, he interested himself actively in work on behalf of Service charities.

He promoted the reorganization of the Royal Patriotic Fund, founded the Soldiers' and Sailors' Families Association, 1885, and the Royal Homes for Officers' Widows and Daughters at Wimbledon, 1899, and was one of the promoters of the S. John Ambulance Association. Knighted in 1902, he died Nov. 6, 1920.

Gilding. Application of very thin metals, principally gold, for decorative and other purposes. The metal is caused to adhere by painting a thin coat of gold size, which is a thickened linseed oil to which has been added a little finely ground ochre. This size becomes tacky, i.e. sticky, in from one to four days.

The leaves of gold measure $3\frac{1}{2}$ inches square, and are contained in books interleaved with paper. When it is desired to finish the work quickly japanner's gold size is used. This becomes tacky in from 30 minutes to two hours. For certain work such as running lines on vehicles ribbon gold is often used. In this the gold is prepared in long narrow strips, and rolled up in the form of a narrow cylinder or wheel with protecting paper between. The wheel is held in a handle, and the gold is transferred in a short time.

Gilead. Mt. district in Palestine E. of the Jordan. In it the tribe of Gad appears to have settled. Elijah was the most notable of its sons. See *Balm*.

Giles (Lat. *Aegidius*). Patron saint of lepers and beggars. He is said to have been born at Athens at the end of the 7th century, and to have emigrated to France, where he became a hermit near Nîmes. He founded an abbey, which was called by his name.

Giles, Ernest (1839-97). British explorer. Born at Bristol, he went to Australia at an early age, and between 1872 and 1882 made a number of explorations into the interior. In the first of these, in 1872, he started from Chamber's Pillar, about 134° E. long., 25° S. lat., and proceeded N.W. as far as Lake Amadeus. In 1873 he journeyed from the Alberga River and followed the 27th parallel to 126°

of E. long. But his most successful journey was in 1874, when, at the end of Sept., with a well-equipped party and numerous camels, he left Fowler's Bay, and after many vicissitudes and hardships reached Perth on Nov. 13.



Ernest Giles,
British explorer

In 1876 he again traversed the continent. Leaving Pia Springs, in $27^{\circ} 7' S.$ lat., $116^{\circ} 45' E.$ long., on April 10, and travelling to the 23rd parallel, he made a general N.E. course, crossing the headwaters of the Murchison, passing Mount Gould, and tracing the Ashburton River to its source. He reached Mount O'Halloran, Aug. 19, and Peake Station, Aug. 23. Towards the end of 1882 he explored the country W. of the Peake. He wrote *Geographic Travels in Central Australia*, 1875; and *Australia Twice Traversed*, 1889.

Giles, HERBERT ALLEN (b.1845). British scholar. Born Dec. 8, 1845, 4th son of J. A. Giles (d. 1884), he was educated at the Charterhouse, and joined the China consular service in 1867. He was vice-consul at Pagoda Island, 1880, and Shanghai, 1883, and consul at Tamsui, 1885, and Ningpo, 1891. Resigning in 1893, he became professor of Chinese at Cambridge University, and was first lecturer on Chinese on the Dean Lung Foundation, Columbia University, New York, 1902. In addition to his *Longinus*, 1870, he was the author of many books on the language, literature, art, and religion of China, including a *History of Chinese Literature*, 1901; *Religions of Ancient China*, 1905; *The Civilization of China*, 1911; *Confucianism and Its Rivals*, 1915; *Introduction to Chinese Art*, 1905, 2nd ed. 1918. He compiled a *Chinese-English Dictionary*, 1892, 2nd ed. 1912; and a *Chinese Biographical Dictionary*, 1897.



H. A. Giles,
British scholar

His 4th son, Lionel Giles (b. Dec. 29, 1875), assistant in the department of Oriental Printed Books and MSS. in the British Museum, secretary of the China Society, and examiner in Chinese at Cambridge and London universities, was educated at the College S. Servais, Liège, Feldkirchen, Austrian Tirol,

Aberdeen University, and Wadham College, Oxford. During the Great War he was attached to the intelligence department of the Admiralty. He has written several works on Chinese subjects and translations from the Chinese, has compiled an *Alphabetical Index to the Chinese Encyclopaedia*, and contributes the article on China to the *Universal Encyclopedia*.

Giffellan, GEORGE (1813-78). Scottish author. Born at Comrie, Perthshire, Jan. 30, 1813, son of a secession minister, he was educated at Glasgow University. In 1836 he became minister of School Wynd Church, Dundee, where he remained till his death, Aug. 13, 1878.



George Giffellan

Between 1845-54 he published three series of critical estimates under the title of *A Gallery of Literary Portraits*, and wrote *Lives of Scott*, 1870, and *Burns*, 1878. See *Memoir*, R. A. and E. S. Watson, 1892.

Gilgal (Heb., stone-circle). Name given in the O.T. to various places. At one, near Jericho, a place of sacrifice in the days of Samuel, Saul gathered his people against the Philistines.

Gilgamesh. Hero of a Babylonian epic, by some identified as Nimrod (*q.v.*). In the twelve books of the epic, corresponding more or less closely to the twelve months of the year, his adventures are set forth; he is a man of mighty strength, a great hunter, and, as ruler of Erech, so evil that the people pray to the gods against him.

Gilgamesh incurs the enmity of the goddess Ishtar; he journeys to the land of the dead, and the account of that journey gives occasion for narrating the Babylonian story of the Flood. The account of Gilgamesh has remarkable parallels with that of Hercules. See *The Religions of Ancient Egypt and Babylonia*, A. H. Sayce, 1902.

Gilgandra. Township of New South Wales. It is 324 m. by rly. from Sydney, and in a wheat-producing district Pop. 2,204.

Gilgit. District, town, and river of Kashmir, India. Lying on the S. slopes of the Hindu Kush, the dist. includes the valleys of Gilgit, Chitral, Swat, and Ladak. Area, 25,000 sq. m. The town stands at an elevation of 4,900 ft. above the level of the sea, 125 m. N.W. of Srinagar. Since 1889 it has been a British Agency.

Gilia. Genus of annual herbs of the natural order Polemoniaceae. They are natives of the warm, but not tropical, regions of America. They have abundant flowers of funnel or salver shape, blue, rose, yellow, purple, white, etc.

Gilkin, IWAN (b. 1858). Belgian poet. Born at Brussels, he was educated at the university of Louvain, where he was known as one of the brilliant group of young Belgian poets headed by Émile Verhaeren. His contributions to *La Semaine des Étudiants*, 1879-81, and to *La Jeune Belgique*, 1881, attracted much attention. He is the author of *Damnation de l'Artiste*, 1890; *Stances Dorées*, 1893; *La Nuit*, his most characteristic work, 1897; *Prométhée*, 1899.

Gill. Organ of respiration in animals that habitually live in water and do not rise to the surface to inhale air. They are found in fishes, crustaceans, many molluscs, the larval stages of batrachians and some insects, and in certain lower forms of life. They are so constructed as to present the largest possible surface containing capillary blood-vessels to the water in order that the contained oxygen may be brought into contact with the blood. Gills may



Gilgamesh, the Babylonian Hercules, strangling a lion

From a sculpture in the Louvre, Paris

vary in their structure from simple slits in the body wall to more or less elaborate plates, filaments, and leaf-like organs. The gills in fish and many other animals are situated at the sides of the head or neck, but in some crustaceans they are found on the limbs; certain echinoderms carry them on the tentacles. No vertebrates higher than fishes and batrachians breathe with gills in the adult stage, but gill clefts are present in an early stage of the development of the embryo. The gills of insects (as May flies) whose larvae pass most of their lives in water are called tracheal gills, from the fact that they are permeated by fine air tubes. See Fish.

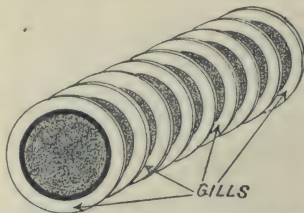
Gill. In engineering, the flat plate or fin fitted to the tubes of a radiator or water cooler in order to facilitate the dissipation of heat.

Gill. Dry and liquid measure of capacity, used in Great Britain and the U.S.A. The gill equals one quarter of a pint, and contains 7.219 cubic ins. The word was formerly used in Scotland and N. England for half a pint, and in Jamaica is popularly used for the sum of three-farthings. Gill is derived from the late Latin *gillo*, a wine vessel. *Pron.* Jil.

Gill. Lough or lake of Ireland. It is mainly in co. Sligo and partly in co. Leitrim; length 5 m., extreme breadth 2 m. It is navigable by small steamers.

Gill, Sir David (1843-1914). British astronomer. Born at Aberdeen, June 12, 1843, and educated at Aberdeen University, he became interested in astronomy, erecting his own observatory. On taking charge of Lord Lindsay's observatory he went out to Mauritius and observed the transit of Venus. Thenceforward he carried out a series of observations which have had a far-reaching effect on astronomical progress and research. In 1877 he went to Ascension Island to determine the solar parallax by a study of the movements of the planet Mars, receiving the gold medal of the Royal Astronomical Society; in 1882 he took fresh measurements of the transit of Venus, and photographed the great comet of that year.

Appointed astronomer-royal at the Cape of Good Hope in 1879, a post he held for 28 years, Gill carried out there his greatest work,



Gill. Cast-iron gilled pipe as used for heating churches, public buildings, etc.

the magnificent catalogue of the stars of the southern hemisphere. This catalogue, comprising nearly half a million stars, was completed in 1900. He was created K.C.B. in 1900, and died Aug. 27, 1914. Among his many published works the more important are Catalogues of Stars for the Equinoxes, 1850, 1860, 1885, 1890, 1900; History and Description of the Royal Observatory, Cape of Good Hope, 1913; and many scientific papers.

Gillain, CYRIAQUE CYPRIEN VICTOR (b. 1857). Belgian soldier.



C. C. V. Gillain, Belgian soldier

Born Aug. 11, 1857, he entered the army as a private at the age of eighteen. After three years' service he passed through the Military Academy, joining the cavalry in 1880. From 1888-96 he served in the Congo, and in 1913 became colonel of the 4th Lancers, which regiment he commanded at the outbreak of the Great War.

From Oct., 1914, he commanded the first cavalry brigade, participating in the battle of the Yser. Major-general in 1915, and lieutenant-general in 1917, he was placed in command of the 5th Division. He succeeded Rucquoy as chief of the staff in April, 1918. By his victory in the battle of Thourout-Thielt, Oct. 14-16, he freed the Belgian coast from the Germans.

Gillespie, Sir Robert Rollo (1766-1814). British soldier. The son of Robert Gillespie, a landowner in co. Down, he was born at Comber therein, Jan. 21, 1766. Educated privately, he obtained a commission in the army in 1783. In 1787 he killed a man in a duel and was tried for wilful murder, but the result was a verdict in his favour. His first spell of active service was in 1794 in San Domingo, where he fought as a volunteer for the French against the rebels. Gillespie's reputation rests upon his services in India, whither he sailed in 1805. He was made commandant of Arcot, from which

he made his famous ride to Vellore, July 10, 1806. He entered the fort and inspired the defenders to hold it until help arrived.

In 1811 Gillespie held a command in a

force sent to Java, and led the attack on Batavia, but he was involved in a serious quarrel with Sir Stamford Raffles, the governor. He had returned to India, and was serving in a war against Nepal, when he was killed in leading a desperate rush on the fort of Kalunga, Oct. 31, 1814. In 1815 he was posthumously knighted.

Gillette, WILLIAM (b. 1855). American actor and playwright. Born at Hartford, U.S.A., July 24,



William Gillette as Sherlock Holmes

1855, and educated at New York and Boston Universities, he made his professional début in 1875 at Boston, and first appeared at New York in 1877. Of his own plays, the most popular have been *Secret Service*, 1896; an adaptation, with Conan Doyle, of *Sherlock Holmes*, 1899; and *Clarice*, 1905.

Gillie. Old name for a Highland man-servant. It is now used to denote one who assists his master on deerstalking and fishing expeditions in the Scottish Highlands. See *Deerstalking*.

Gillies, JOHN (1747-1836). Scottish historian. Born at Brechin, Forfarshire, Jan. 18, 1747, and educated at the University of Glasgow, in 1793 he became historiographer royal for Scotland. His *History of Ancient Greece*, 1786, was long considered a standard work. He died Feb. 15, 1836.

Gillingham. Market town of Dorset. It stands on the Stour, 23 m. W.S.W. of Salisbury, with a station on the L. & S.W. Rly. The main



Sir Robert Rollo Gillespie, British soldier
From a miniature



John Gillies, Scottish historian

He died Feb.

industry is the marketing of agricultural produce. The chief building is the church of S. Mary the Virgin. Market day. Monday. Pop. 3,570.

Gillingham, Mun. bor. of Kent. It stands on the Medway to the E. of Chatham, of which it is virtually a suburb, and is served by the S.E. & C. Ry., being 36 m. from London. It has a fine Perpendicular church with a curious Norman font, but most of the building is modern. It was made a borough in 1903, and includes the districts of Brompton and New Brompton. The industries include the making of bricks and cement, while many of the inhabitants work in the dockyards of Chatham. The corporation owns the electricity undertaking, and provides a park, recreation ground, and cemeteries. It has a new drainage system. One member is returned to Parliament, the borough forming for this purpose a division of Chatham. Gillingham existed in Anglo-Saxon times. It became a market town in the time of Edward III, and was one of the chief stations of the navy until supplanted by Chatham. Pop. 52,252.

Gillingham, FRANK HAY (b. 1875). English clergyman and cricketer. He was born Sept. 6,



F. H. Gillingham,
English cricketer.
Russell

1875, at Tokyo, Japan, and was educated at Dulwich and Durham University. Having been ordained, he was curate at S. James the Less, Bethnal Green, and in 1914 was appointed rector of S. Mary Magdalene, Bermondsey. He qualified to play for Essex, for which county he first appeared in 1903. In 1904, against Middlesex at Lord's, he played an innings of 201, his highest in first-class cricket, and in 1908 made 1,033 runs in 29 innings.

Gillott, JOSEPH (1799-1873). British penmaker. Born at Sheffield, Oct. 11, 1799, he served his time as a cutter. In 1821 he moved to Birmingham, where in 1830 he began experimenting in steel nib making. His first improvement was the introduction of side slits in addition to the centre slit, which made the nib more



Joseph Gillott,
British penmaker

pliable. His next improvement was to cross-grind the point. So far all his work had been performed in secrecy, the finished nibs being sold to a stationer at the price of a shilling each. In 1859 he opened a large factory, and the business soon became one of the largest of its kind. Gillott made a fortune, much of which was spent on a collection of pictures, which at his death was sold for £170,000. He died at Edgbaston, Jan. 5, 1873.

Gillow, ROBERT (d. 1773). English furniture maker and designer. Gillow set up a cabinet-making business at Lancaster about 1730, and opened a London house in 1761. The business was greatly developed by his sons, Richard, Robert, and Thomas, whose high standards of craftsmanship were worthy of the designs made for them, among others by George Hepplewhite, and from about 1790 to 1800 by Thomas Sheraton. Gillow and Barton, as the firm became, were credited with the introduction of the telescopic dining-table, and were the leading furniture makers of the 18th century in England. See Furniture.

Gillray, JAMES (1757-1815). British caricaturist. Born probably at Chelsea, of Scottish or Irish descent, he was apprenticed to a letter-engraver. Later he attended the R.A. Schools and studied engraving under W. W. Ryland and Bartolozzi. His aptitude for caricature, at first confined to social foibles, early displayed itself anonymously, but in 1779 his plate of Paddy on Horseback, published under his own name, announced his entrance into the political arena.



James Gillray,
British artist

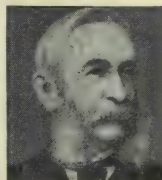
From this date until he died, virtually demented, in London on June 1, 1815, he produced no fewer than 1,500 pieces, mostly caustic. He spared no one. George III and his queen were as ruthlessly assailed as William Pitt, Charles James Fox, and other party leaders, and the public vociferously applauded all. His illustrations of social manners and customs are invaluable to the historian. See Caricature.

Gillwell Park. Scout officers' training centre. Situated in Epping Forest, about 1 m. from Chingford station, it comprises 55 acres of open ground and woodland with an historical mansion tracing descent from a hunting lodge of

Edward VI. It was presented to the Boy Scouts' Association by W. F. de Bois Maclaren, District Scout Commissioner for Roseneath, Dumbartonshire, and was opened July 26, 1919. The scoutmasters are housed in the mansion, and the surrounding grounds form an ideal centre where knowledge of field-craft, campercraft, pioneering, and pathfinding is acquired. Scoutmasters from all over the world attend in groups of twenty-four for a ten days' course. See Boy Scouts.

Gillyflower. Name originally applied to carnation (*Dianthus caryophyllus*), but now used chiefly for stocks (*Matthiola*) and wallflower (*Cheiranthus*). It is a corruption of Fr. *giroflee*, which is derived from Gr. *karyophyllon*, nut-leaf, clove-tree, in reference to the clove-like smell. See Stock; Wallflower.

Gilman, DANIEL COIT (1831-1908). American educationalist. Born at Norwich, Connecticut, July 6, 1831, he was educated at Yale, New Haven, and Berlin Universities. He became librarian and, in 1856, professor of physical and political geography at Yale, and president of the University of California, 1872-75. He helped to found and was first president of, 1875-1901, John Hopkins University, Baltimore. He served on the Venezuela Boundary Commission, 1896; was president of the Carnegie Institution of Washington, 1901-4; executive officer of the geological survey of Maryland, and president of the National Civil Service Reform League and of the American Bible Society.



Daniel C. Gilman,
American educationalist

His books include *University Problems*, 1898; a *Memoir of James D. Dana, Geologist*, 1899; *James Monroe in His Relations to the Public Service* (1776-1826), 1883, 2nd ed. 1898; *Science and Letters in Yale*, 1901. He edited De Tocqueville's *Democracy in America*, and the miscellaneous writings of Francis Lieber, and was one of the general editors of the first edition of the *New International Encyclopedia*, 1902-4. He died Oct. 13, 1908. See Life, F. Franklin, 1910.

Gilolo or **HALMAHERA**. Island of the Malay Archipelago, one of the Moluccas or Spice Islands belonging to Holland. It consists of four peninsulas, two in the N., one E., and one S. The Molucca passage separates it from Celebes in the W., and Pitts Passage divides

it from Ceram on the S., while Gilolo Passage flows along the E. shores. Mountainous and heavily forested, the equatorial line passes through the S. limb of the island. There are several active volcanoes, the chief of which are Tolo and Gamakora. Its length from N. to S. is about 130 m., while its maximum breadth in any of its peninsulas does not exceed 45 m.; its estimated area, including several small islands, is 6,900 sq. m.

The largest of the bays are Bolollo, Weda, Wossa, and Kian. Fertile in the cultivated areas, spices, fruits, sago, coconuts, and edible birds' nests are produced. Horses, cattle, and sheep are reared, and precious gems are found. The principal towns are Gilolo, the capital, Galela, and Patani. Subdivided into several petty states, the coastal districts are inhabited by Malays, while, in the interior, a race of inoffensive people, called Alfuras, exist. Pop. (est.), 100,000.

Gilpin, BERNARD (1817-83). English divine and philanthropist. Born at Kentmere, Westmorland, he was educated at Queen's College, Oxford. He studied later at Paris and Louvain, and became archdeacon of Durham and rector of Houghton-le-Spring, where he died March 4, 1883. Here he founded a grammar school, and became famed for his beneficence. He was offered the bishopric of Carlisle, but declined it. He spent his later years in journeying about the district, preaching and relieving distress.

Gilpin, JOHN. Hero of a poem by William Cowper (*q.v.*). It describes how Gilpin, a linen-draper and a train-band captain, but a poor horseman, attempted to follow his wife and family to Edmonton on horseback, but was carried on to Ware, whence, with equally diverting adventures, he was carried back to London. The poem was based on an anecdote of a Mr. Beyer, of Paternoster Row, told to the poet by Lady Austen.

Gilsonite. Mineral named after an American, S. H. Gilson. A black, brilliant bitumen, it is a non-conductor of heat and electricity, and is used for making paint and varnishes. It is chiefly found in Utah and Colorado, U.S.A.

Giltspur Street. London thoroughfare running N. from the Old Bailey to W. Smithfield. An approach to the old jousting ground at Smithfield, hence its name, it contained, 1791-1856, a comptroller, or debtors' prison, at the S.E. corner. On the same side are parts of the G.P.O. and S. Bartholomew's Hospital, with, in the yard of the former, below the surface, a bastion of the Roman wall.

Gilyak. Primitive tribe of palaesiatic stock in N. Sakhalin and on the lower Amur, E. Siberia. Short and round-headed, they display a sparse-bearded Tungus type and a bushy-bearded Ainu type. They occupy in the winter pit-huts and in the summer pile-houses. They are skilful boatmen, hunt with bow and arrow, and subsist mainly on salmon and sturgeon. Their animism includes a bear-festival. They numbered in 1915 6,194.

Gimbals (Fr. *jumelle*, Lat. *gemellus*, twin). Brass rings in which a ship's compass is hung. They are so arranged that the compass remains horizontal, no matter how the vessel rolls and pitches.

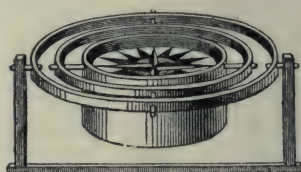
Gimcrack Club. Racing club. Founded in 1767, its name commemorates that of a famous racehorse. It holds an annual dinner at York, the rule being that the guest of the evening shall be the owner of the horse that wins the Gimcrack Stakes, a race run every Aug. at York.

Gimli. In Norse mythology, a great hall. It was of wonderful brightness, and the idea was that it would remain after the destruction of the world, to be for ever the home of the good.

Gimmel Ring. Two or more separable hooks which when linked together form a single finger ring. They were formerly popular as betrothal rings and ornamented with a device of two clasped hands or two hearts.

Gimp (Fr. *guimpe*, nun's wimple). Lace trimming stiffened with cords covered with silk or worsted. It is sometimes enriched with gold or silver, and usually of rather an open design.

GIN. Colourless spirit flavoured with juniper berries and other aromatic herbs. It is distilled in a patent still, the grain used being maize, to which a little barley malt is added. The gin rectifier buys the neutral spirit, and then rectifies it. Sometimes it is rectified twice, and of course commands a higher price. It is flavoured by distillation with juniper berries, although occasionally essential oil of juniper is added to the rectified product. Each gin rectifier has his own recipes for flavouring, and very often in addition to juniper, almonds, cardamoms, cassia, orris-root, coriander seeds, or other aromatics are added. London gin is known all over the world, and another variety which has a large sale is "Plymouth" gin, which is supposed to obtain its particular flavour through having a little sulphuric acid added to it before rectifica-



Gimbals, device of brass rings for keeping a mariner's compass horizontal

tion; "Old Tom" is simply ordinary gin sweetened with sugar or sugar syrup.

At one time Geneva had a much larger sale in this country than gin, but during the last 100 years the home manufacturer has built up a large trade in gin, and the foreign article has a small sale as compared with gin. Geneva is simply Dutch gin, and is sometimes called hollands, or schnapps, but it has nothing to do with the city of Geneva. No doubt it is derived from the Dutch word "jenever," which in English means juniper. Geneva is principally made in Schiedam, Holland, on much the same lines as English gin. Gin contains from 38 p.c. to 50 p.c. of alcohol. See Distilling.

Ginchy. Village of France, in the dept. of Somme. It is 7 m. E. of Albert and 2 m. N.W. of Comblès. Prominent in the battles of the Somme, it was captured by the British, Sept. 10, 1916. Re-taken by the Germans in March, 1918, it was recovered by the Allies in the autumn. See Somme, Battles of the.

Ginger (*Zingiber officinale*). Perennial herb of the natural order Scitamineaceae. It is a native of the E. Indies. It has a horizontal rootstock, which forms the ginger of commerce. The leaves are narrow, lance-shaped, up to 1 ft. long. The



Ginger. Horizontal rootstock with flowering shoots

yellow and blue flowers are clustered in a dense oval spike, on a tall, leafless stem. Preserved ginger consists of the young rootstocks preserved in syrup. The ordinary form, used as a spice, is the year-old rootstock, either skinned or unskinned.

Ginger Ale. Aerated beverage flavoured with ginger, acidulated with citric or other vegetable acid, and coloured with caramel. It is manufactured in the same way as soda-water, except that before water saturated with carbonic acid is forced into the bottle, a small quantity of ginger-ale syrup is placed in it. This syrup contains citric acid, caramel, ginger ale essence, and sugar. The ginger ale essence is a compound of ginger, lemon, vanilla, and cinnamon, each manufacturer having his special proportions of ingredients, upon which the flavour of the product depends. Ginger ale is a clear, effervescing liquid, highly popular as a temperance beverage.

Ginger Beer. Beverage flavoured with ginger and lemon, and produced by fermentation. If containing less than 3 p.c. of proof spirit, it may be sold without a licence, but if it contains more, it comes within the legal definition of "beer," as given in the Revenue Acts of 1880 and 1885. Ginger beer is brewed as follows: Slice four lemons and put them with 4 oz. of bruised Jamaica ginger, 2 oz. of cream of tartar, $\frac{1}{2}$ oz. of citric acid, and 3 lb. of sugar, into a wooden vessel, and pour in 4 galls. of boiling water. Cover over with a blanket overnight, and next morning add 2 oz. of yeast, and allow the liquid to ferment for eight hours. Then strain and bottle, fastening the corks with string or wire. As ginger beer is a cloudy liquid it is usually bottled in stone or earthenware bottles. The clear variety in glass bottles, entirely free of alcohol, is an aerated water, flavoured with soluble essence of ginger.

Gingerbread. Cake flavoured with ginger. The chief ingredients are flour, butter or lard, eggs, and treacle. More elaborate recipes add candied peel, sweet almonds, cinnamon, etc. Gingerbread was made six centuries ago with rye flour, honey, and various spices, besides ginger. At one time small gingerbread figures of people and animals were sold by bakers, the figure decorated with gold paper being regarded by the children as the king of the others. Many county towns have been noted for gingerbread fairs, at which small gingerbread cakes, known in East Anglia as "brown buttons," were sold.

Ginger Wine. British wine prepared from ginger, lemons, raisins, and sugar, by fermentation. One method of preparation is as follows: Boil together for an hour 1 lb. of loaf sugar, the rinds of seven lemons and of two Seville oranges, $\frac{1}{2}$ lb. of bruised ginger, and 4 oz. of raisins, in 6 galls. of water, then place in a wooden vat and cover over. Next day add the juice of the lemons and oranges, and 1 oz. of isinglass; strain into a cask, and add two tablespoonfuls of yeast. Allow to ferment three days, then close the vessel with a bung. After six weeks strain into another cask, and four weeks later the wine will be ready for bottling. The modern method of making British wines is to prepare what is known as a "basis" wine, and then to flavour it according to the variety of wine desired. A licence is necessary for the manufacture, for sale, of ginger wine.

Gingham (Malay *ging-gang*, striped). Cotton or linen fabric woven from white or coloured yarn often in stripes, checks, or other designs, used for dresses, umbrellas, etc. Gingham was introduced into Europe from India. The patterns, though sometimes resembling those on calico, are woven in, not printed as on calico. Gingham is manufactured chiefly at Glasgow and Manchester, and in the U.S.A. Earliest, in Berwickshire, is still famous for its gingham. An umbrella is sometimes colloquially called a gingham.

Gingivitis (Lat. *gingiva*, gums). Inflammation of the gums (*q.v.*).

Ginkel, GODART VAN (1630-1703). Dutch soldier. Son of a Dutch nobleman, he entered the army and saw a good deal of service in the wars against France. In 1688, being then known as an able soldier, he crossed to England with William of Orange, under whom he also served at the battle of the Boyne. When the king returned to England, Ginkel was left in command in Ireland, where he captured Ballymore and Athlone. He was responsible for the English victory at Aughrim and for the captures of Galway and Limerick that ended the war. He continued his military career in the Low Countries, and, in spite of his age, led the Dutch in Marlborough's army in 1702. He died at Utrecht, Feb. 11, 1703. In 1691 Ginkel was made earl of Athlone, a title held by his descendants until 1844.

Ginning. Separation of cotton fibre from cotton seed by the gin (a corruption of engine). Bowing was the original process, the seed being struck by the string of a wooden bow. Roller gins with

parallel fluted rollers were in use before 1793, when Eli Whitney's invention of the saw-gin ushered in a new era in the cotton trade. See Cotton.

Ginsburg, CHRISTIAN DAVID (1831-1914). Polish Hebrew scholar. He was born at Warsaw and educated at the Rabbinical School, and later in England, where he made his home. He was a member of the O.T. revision company, and published a large number of important works on the Hebrew Scriptures, as well as contributions to encyclopedias and dictionaries. It was owing to him that the MSS. offered by Shapira to the British Museum were discovered to be a forgery. He died March 7, 1914.

Ginseng (*Panax schinseng*). Plant of the natural order Araliaceae. A native of N. Asia, it has



Ginseng. Leaves and flowers of the medicinal herb

compound leaves and greenish flowers in umbels. The name is Chinese, and signifies Wonder of the World, the physicians believing that the bitter root restores lost animal functions, removes fatigue, and rejuvenates the old. See Araliaceae.

Gioberti, VINCENZO (1801-52). Italian philosopher and politician. He was born at Turin, April 5, 1801, where he became professor of theology. Exiled for his independent opinions, he withdrew to Paris. The events of 1848 brought him back to Turin, where he held various political offices. He afterwards returned to Paris, where he died Oct. 26, 1852. Gioberti, who may be called a Platonic idealist, endeavoured to reconcile the claims of science and religion.

His most important works were *Introduzione allo Studio della Filosofia* (Introduction to the Study of Philosophy), *Del Rinascimento civile d'Italia* (the Civil Renewal of Italy), and *Il Gesuita Moderno* (the modern Jesuit). Although he was a devout Catholic, his works, which were strictly orthodox, were placed upon the Index.

Gioja del Colle. Town of Italy, in the prov. of Bari. A junction on the Taranto line, it stands at an alt. of 1,180 ft. above sea level, 37 m. by rly. N. of Taranto. It trades in grain, wine, and oil. Pop. 21,852.

Giolitti, GIOVANNI (b. 1842). Italian statesman. Born at Mondovì, Oct. 27, 1842, he was educated at the university of Turin. An advocate by profession, he turned his attention to politics, was elected a member of the Chamber of Deputies, and became minister of finance in 1889.

He was president or prime minister for the fourth time from March, 1911, until 1914, when he resigned and was succeeded by Salandra. After the outbreak of the Great War he tried to keep Italy neutral, on the ground that she could obtain sufficient concessions with regard to the frontier from Austria without fighting. He was prime minister again, 1920-21.

Giordani, PIETRO (1774-1848). Italian author. Born at Piacenza, Jan. 1, 1774, he became a Benedictine monk, but in 1800 left the order and became secretary to the Accademia at Bologna. The publication of his *Panegirico all'Imperatore Napoleone* was sufficient to warrant his disgrace at the reaction of 1815, and he was the object of continual persecution until his death at Parma, Sept. 1, 1848. He wrote some of the best prose of his period, and his essays and eulogies have become classics.

Giordano, LUCA (1632-1705). Italian painter. Born in Naples, he studied under Giuseppe Ribera, and afterwards went to Rome and Venice. He painted in a free and animated manner, his composition was harmonious, his imaginative gifts were considerable, and his foreshortening was at once daring and correct. He was summoned to Madrid in 1692 by Charles II to embellish the Escorial.

His nickname of *Fa Presto* was derived from his father's constant injunction to hurry up (Luca, *fa presto*—Luke, make haste). His best work is to be found in the

Escorial, especially his decoration of the staircase, representing the Battle of St. Quentin and the Taking of Montmorency. His pictures may be seen in most of the leading collections on the Continent, his Commerce and Navigation (Florence) and the Judgement of Paris (in the Berlin Gallery) being especially characteristic.

Giorgione, GIORGIO (1477-1511). Venetian painter. Said to have belonged to the Barbarelli



Giorgio Giorgione,
Venetian painter
Self-portrait

family, he was born at Castelfranco, and studied under Giovanni Bellini, among his fellow-pupils being Titian and Palma the Elder. Among his most celebrated works are *The Sleeping Venus* (Dresden Gallery), *Evander and Pallas* (Vienna Gallery), *The Fête Champêtre* (Louvre), *The Golden Age* (National Gallery, London), and three in Venice, *Adrastus and Hypsipylé* (Palazzo Giovannelli), *Apollo and Daphne* (the Seminario), and *S. Mark Stilling the Storm at Sea* (the Accademia).

Some of these were unfinished at the time of his death in Venice, but his contemporaries, even Titian, deemed it an honour to complete the master's work. In his two versions of *Jesus Bearing the Cross*—one privately owned in Boston and the other in the church of San Rocco, Venice—he drew the Saviour after his own unconventional ideas. His landscape work was equally distinguished, and, to judge from the few of his portraits that have survived—like *The Knight of Malta*, *The Concert*, in the Uffizi and Pitti galleries in Florence, and *Caterina Cornaro*, in a private collection in Milan—he was also an accomplished portraitist. See *Giorgione*, H. Cook, 1900.

Giotto di Bondone (c. 1266-1337). Italian painter. The father of the Italian Renaissance, as he is considered to be, was born at Colle, near Florence. It is probable that he was the son of Francesco

Bondone di Vespignano, a well-to-do landed proprietor; that he was apprenticed to the wool trade:

that he was in the habit of stopping at Cimabue's studio in Florence on the way to his work, and by this means called the master's attention to his genius.

Possibly Giotto became a pupil of Cimabue, but the naturalistic bent of his art from the first suggests that he owed more to the sculptor brothers, the Pisani, than to any painter, and more to first-hand study of nature than to any master. About 1298 his technical proficiency must have been achieved, for it was then that he designed the mosaic of the *Navicella* and painted the famous *Stefaneschi* altar-piece for S. Peter's, Rome. The former is now in the portico of S. Peter's, and most of the latter—a triptych, with the central panel representing Christ Enthroned—in the Sagrestia dei Canonici. The more widely known frescoes of the *Life of S. Francis* in the Franciscan Church of Assisi were painted shortly after, and in 1303 he was commissioned by Enrico Scrovegno to decorate the chapel of the *Annunziata dell' Arena* at Padua with frescoes of the *History of the Virgin and Son*. The mutilated frescoes of S. Francis's life in S. Croce Church, Florence, were executed considerably later.

One of his last works was the design for the beautiful campanile of Florence Cathedral. These are the most notable extant examples



Giotto di Bondone,
Italian painter
From a print



Luca Giordano,
Italian painter
From an etching



Giotto di Bondone. The Ascension, one of the famous series of frescoes painted in 1305 in the chapel of the *Annunziata dell' Arena*, Padua

of an art that broke away from the conventions of contemporary Byzantinism and opened the door to naturalism in form and colour. Giotto died at Florence, Jan. 8, 1337. *See Italy: Art*; consult also Lives, F. M. Perkin, 1902; B. de Sélincourt, 1905.

Giovinazzo. Seaport of Italy, in the prov. of Bari, the ancient Natiolum. It stands on the N. shore of the Adriatic, 12 m. by rly. N.W. of Bari. A walled town, it possesses a 13th century cathedral and a fortified castle. Building stone is quarried in the neighbourhood, brandy is distilled, fishing-nets are manufactured, and fruit and wine of excellent quality are produced. Pop. 10,727.

Gippsland. District in S.E. Victoria, Australia. Its area is 13,900 sq. m. Rugged and mountainous, it was formerly well timbered with giant eucalyptus, but is now extensively cleared and settled. Its coastal lake district consists of lagoons and sandy dunes. It is rich in both agricultural—chiefly dairying—produce and minerals. Coal is found, and at Wonthaggi the state mine yields 900,000 tons per annum. Gold is found at Walhalla; silver, lead, tin, copper, antimony, and wolfram are also produced. The chief town is Sale.

Gipsy Hill. Residential district of London, S.E. One of the divisions of Norwood (*q.v.*), it is 8 m. S. of London Bridge, and has a station on the L.B. & S.C.R. Norwood was once a favourite haunt of gypsies, and Gipsy Hill preserves the memory of one of them, Margaret Finch, who died in 1760 at the reputed age of 109 years.

Giraffe (Arab. *zarāf*). Member of the even-toed ungulate or hoofed mammals, remarkable for the great length of its legs and neck. The body is comparatively short, the fore-quarters standing much higher than the hind ones, and the tawny pelt is handsomely marked with a network of light lines, the pattern varying considerably in local races. The long, narrow head is surmounted by a pair of short horns, or bony cores, covered by the skin. The tongue is remarkably long and is used to grasp the twigs and leaves of trees. Owing to the great length of the fore legs, the giraffe can only reach the ground with its mouth by straddling its legs widely apart, and it has seldom been seen to graze.

Giraffes are found only in Central and S. Africa, chiefly in desert regions, where they have to subsist for long periods without drinking. There is probably only one species, divided into several local races or

varieties. The animals are wary and timid, but when at bay can deliver formidable kicks with their long legs. Their gait when running is peculiar and clumsy, but they get over the ground at great speed. The flesh is eaten by the natives, and is said to be of excellent quality.

Giraldus Cambrensis (c. 1150–c. 1222). Welsh historian. Born in Wales, about 1150, he was given the name of Gerald, and the combination made him known as Giraldus Cambrensis. His father was William de Barri, hence he is sometimes called Gerald de Barri. He studied in Paris, and entered the Church, becoming an archdeacon owing to the influence of his uncle, the bishop of St. Davids. He visited Ireland with Prince John, but most of his time was passed in clerical and political work in Wales. In 1198 he was chosen bishop of St. Davids, but the opposition of the archbishop of Canterbury prevented him from enjoying the dignity, although he tried hard to obtain the papal consent thereto. His failure to obtain the bishopric, to which he had been elected once before, was probably due to his in-

dependent spirit. He died probably in 1222. Giraldus wrote several works, two being on Ireland, one the story of its conquest by the English; he also wrote *Itinerarium Cambrense*. All have been published in the Rolls series, 8 vols., 1861–69. *See Gerald the Welshman*, H. Owen, new ed. 1904.

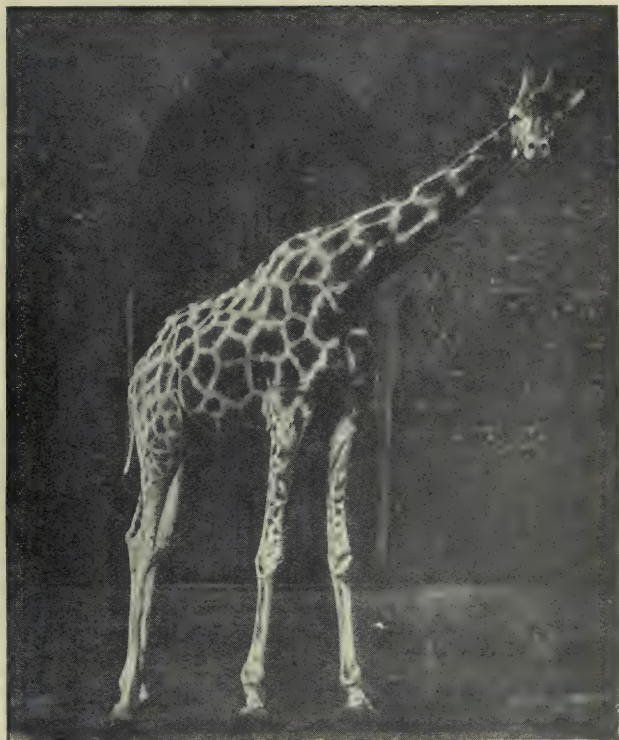
Girandole (Lat. *gyrus*, circle). Wall candelabra, or candle branches, attached to a mirror. They were much used during the Directoire, Empire, and Georgian periods.

Girardin, ÉMILE DE (1806–81). French journalist and politician.

Born at Paris, June 22, 1806, he early devoted himself to journalism for the masses, and in *La Presse*, 1836, inaugurated in France the cheap popular newspaper of the modern type. To its columns his first wife, Delphine de Girardin (1804–55), contributed a brilliant series of sketches published under the collective title of *Lettres*



Émile de Girardin,
French journalist



Giraffe. Male specimen of the Central African giraffe

Gambier Bolton, F.Z.S.

parisiennes (1843). She was also the author of several romances and plays. As a politician Émile de Girardin first supported the conservatives, but later became a republican. He also wrote some indifferent plays and a novel, *Émile*, 1827. He died at Paris, April 27, 1881.

Girasol (Ital. *girasoletto*, from *girare*, to turn, *sole*, sun). Gem which reflects bright red or yellow light apparently coming from its interior. The most remarkable form is the fire opal, which gives bright hyacinth, yellow, or fired reflections; the finest examples have been found at Zimapan, Mexico, and in the Faroe Islands. A sapphire, presenting a radiate flamboyant interior, and known as star sapphire or asteriated sapphire, found in India, has also the property of a girasol. At one time girasols were highly esteemed, but they can be imitated artificially with facility. See Opal.

Giraud, ALBERT (b. 1860). Belgian poet. Born and educated at Louvain, he was prominent in the renaissance of Belgian poetry headed by Émile Verhaeren. His contributions to *La Jeune Belgique*, from its beginning in 1881, marked him as one of the most promising of the young poets. In 1894 he succeeded Iwan Gilkin (*q.v.*) in the editorship of that review. The delicacy of his technique was well displayed in *Pierrot Lunaire*, 1884, and *Pierrot Narcisse*, 1891, its richness and strength in *Hors du Siècle*, 1888-94. Giraud was profoundly influenced by the work of Charles Baudelaire. His most noteworthy later volumes are *La Guirlande des Dieux*, 1910, and *La Frise empourprée*, 1912.

Girder. Beam, supported at each end and carrying a load between its supports.

Steel girders consist essentially of top and bottom flanges or booms which resist the horizontal components of the bending stress, and webs perpendicular to and uniting the flanges, which resist the vertical shearing stresses. Compound girders comprise more than one web. Steel joists are rolled with web and flanges in one piece without a joint. In plate girders the webs consist of plates secured to the flanges, usually by angles and rivets.

In a triangulated or lattice girder, diagonal and frequently vertical bracing is introduced instead of a plate web. Subject to the amount and nature of the load, steel joists are employed for spans up to 40 ft., plate girders for spans up to 70, and even 100 ft., and triangulated girders for spans of from

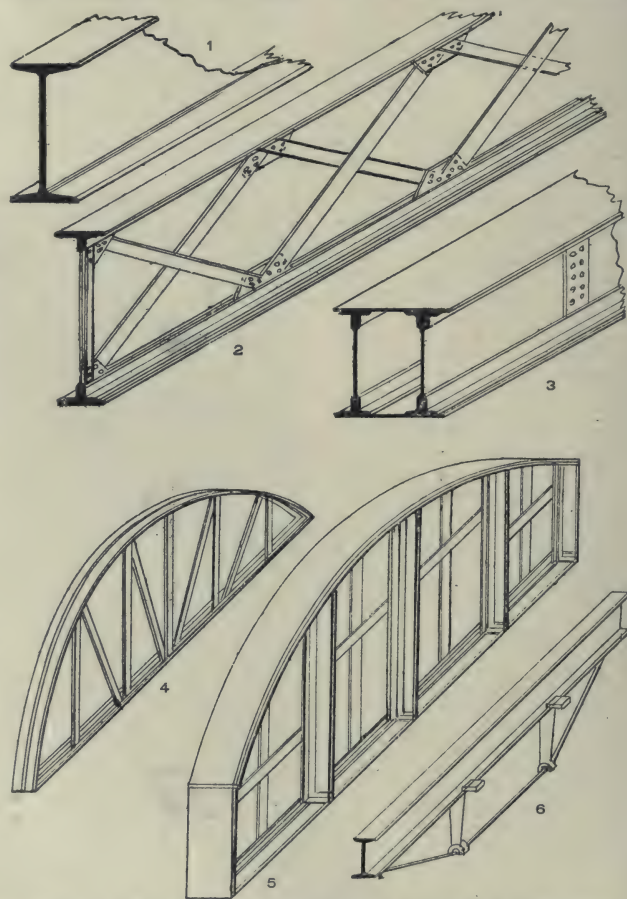
20 ft. upwards. Cast iron and wrought iron have been almost superseded by steel for girder work; the former because of its low tensile resistance, the latter owing to its greater cost and inferior strength.

Wind girders resist wind pressure on structures. A continuous girder has three or more supports. Cantilever girders have one or both ends projecting beyond their support, and are loaded on the projecting portions. Reinforced concrete girders are a combination of concrete and steel bars in which the steel is disposed to resist the tensile stresses. See Bridge; Engineering; Steel.

Girdle. Belt worn round the waist to draw in loose outer garments, to keep up breeches or petticoats, or to carry weapons or other articles in constant employ-

ment. From these primitive uses an article of apparel developed that lent itself to rich decoration by armourer, broiderer, and goldsmith, and led to the formation of a distinct craft in the Girdlers' Company (*q.v.*).

The use of the girdle as an obvious convenience for carrying sword or dagger is very ancient. *Cingulum deponere*, to lay down the belt, was the Roman phrase for leaving military service; and in the days of chivalry his girdle was an elaborate part of the knight's equipment, heavily bossed and fastened with enamelled or jewelled buckles. In the 15th and 16th centuries civilian extravagance brought the girdle within the purview of the sumptuary laws. After the 16th century it gradually disappeared and now only survives in a few distinctively national



Girder. 1. Rolled steel girder or I beam. 2. Part of simple lattice girder. 3. Plate and box girder. 4. Bowstring girder. 5. Arched or hog-back plate girder, much used in railway construction. 6. Trussed beam, employed in Pullman and other railway passenger cars



Girdle. Examples from Brasses: left to right, Sir Simon de Felbrigg, 1351, Felbrigg Church; Sir Richard Willoughby, 1329, Willoughby Church; Sir Thomas Bokenham, 1460, S. Stephen's Church, Norwich

costumes and makes ephemeral reappearances at the caprice of fashion. See Baldric; Costume.

Girdlers' Company. London city livery company. Originally a fraternity of girdle makers in S. Laurence, Old Jewry, it was incorporated in 1449 and united with the Pinners and Wire-drawers in 1568. Thomas Sutton, founder of the Charterhouse, was a member. The hall, 39, Basinghall Street, E.C., burnt with the archives in 1666, was rebuilt in 1681-82 and restored and altered in 1878-79. See Historical Account of the . . . Girdlers, W. D. Smythe, 1905.

Girgeh. Town, prov., and dist. of Egypt. The town is on the W. bank of the Nile, 313 m. S. of Cairo by rly. Its pop. is 19,893, of whom 5,443 are Copts. The prov. has an area of 576 sq. m. and a pop. of 863,234.

Girgenti. Maritime prov. of Italy, in the S.W. of Sicily. Area, 1,175 sq. m. Mountainous, it is drained by several rivers, of which the Platani is the chief. Well served by rlys., it produces sulphur, fish, oil, grain, and fruits. Pop. 409,133. Pron. Jeer-jenty.

Girgenti (anc. Agrigentum). City of Sicily, capital of the prov. of Girgenti. Situated on an eminence near the coast, 84 m. by rly. S. of Palermo, it has medieval walls, strengthened by towers and pierced by four gates, and is noted for its catacombs. Besides a 14th century cathedral, with a wealth of artistic and historic relics, it has a museum of antiquities and a library, but its chief glories consist in its numerous remains of Greek temples. (See Agrigentum.) There is a large trade in sulphur, salt, grain, oil, fruit, etc., which is exported through Porto Empedocle. Founded as Acragas in 582 B.C., it

was in the hands of the Saracens from 828 to 1086. Pop. 27,106.

Giriyama OR GIRYAMA. Tract of country S. of the Sabaki river in the British colony of Kenya. It extends inland for 40 m. behind the coastal fringe, over a length of 55 m., having water communication with

Kalifi Bay. It is occupied by the Wagiriyama, a Bantu-speaking agricultural people allied to the Kikuyu and Pokomo. Their graded system of initiation, under tribal elders, is directed by a paramount council of the highest degree, who are called Hyenas. The S. pastureland has been adversely affected by Masai raids. The cereal produce of the central region is now of great economic importance.

Girl Guides. Organization for the training and welfare of girls. Founded by Sir R. Baden-Powell (q.v.), it was developed by his sister Agnes Baden-Powell. Girls are eligible for membership between the ages of 8 and 18, those from 8 to 11 years being known as Brownies. The girls are trained in good and happy citizenship and encouraged to retain their womanliness so that they may be good "guides" to the next generation. Physical training and instruction in useful arts and crafts are important features. Recruits having had a month's attendance at the guide meetings and learnt the guide law become "tenderfoots" and have then to pass a test in intelligence, handicraft, service, and health before being promoted to the position of second class guides. To qualify for first class, certain proficiency badges must be gained.



Girl Guides. Left, dress of Brownie; right, First Class Guide

Guides work in patrols of 6 or 8 girls under a patrol leader, who must have been three months in the company and have passed her second class guide test. A company may consist of from two to five patrols under the guidance of a captain and a lieutenant. These officers are known as guiders; captains must be over 21 years of age and lieutenants over 18. As in the Boy Scout movement, rallies, displays, exhibitions of handiwork are held, and camps are organized. Proficiency and good conduct badges are awarded, the highest distinction being the Nurse Cavell badge, awarded for life-saving. Guides have a law, one clause of which is, "A Guide is a friend to all, and a sister to every other girl"; and an official song.

During the Great War they equipped hostels and first-aid stations, helped in canteens and hospitals, acted as orderlies in govt. offices, while a number of them acted as orderlies in offices in connexion with the Peace Conference in Paris, 1919.

The membership in 1920 was about 321,000, including the Girl Scouts of America, who have the same rules and law. The headquarters are in the same building as those of the Boy Scouts at 25, Buckingham Palace Road, London. Princess Mary is president and Lady Baden-Powell chief guide. See Scouting.



Girgenti. Ruins of the temple of Castor and Pollux

Girls' Friendly Society.

Church organization for the benefit of girls of all classes, with branches all over the world. Its aims are to band together in one society women and girls as associates and members, for their mutual help (religious and secular), to encourage purity of life, dutifulness to parents, faithfulness to employers, temperance and thrift, and to provide the privileges of the society for its members, wherever they may be, by giving an introduction from one branch to another.

Any member, associate, or candidate who emigrates to any part of the British Dominions overseas is given protection while travelling, is received by an overseas member on landing, and has employment found for her. Associates are required to belong to the Church of England, but this restriction does not apply to ordinary members, who may be of any recognized denomination. Every incumbent of a living is ex-officio patron of the society in his own parish.

The Society was founded in 1875 and its membership is about 160,000. The headquarters are at 39, Victoria Street, London, S.W. **Gárnar.** Sacred hill of India, in Kathiawar, Bombay, 10 m. E. of Junagarh town. There are numerous Jain temples on the hill, which is one of the sacred places of the Jains. The hill has five principal peaks, the highest being Gorakneth, 3,666 ft. above sea level.

Girón or **Jirón.** Town of Colombia, S. America, in the prov. of Santander. It stands on the river Lebrija, 10 m. S.W. of Bucaramanga, with manufactures of tobacco. There are gold mines in the surrounding districts. The town was founded by Jesuits in 1631. Pop. 6,202.

Gironde, La. Estuary of France. It is formed by the union of the Garonne and the Dordogne, and is about 50 m. from there to its mouth in the Bay of Biscay. Its width varies from 2 m. to 6 m., and in spite of certain obstructions large vessels can pass up it to Bordeaux. At its mouth is the Tower of Cordouan, a lighthouse standing on an island.

Gironde. Department of S.W. France. Named after the estuary, its area is 4,140 sq. m. It fronts the Bay of Biscay on the W., and this western section forms part of the district called the Landes, being a low and sandy plain containing several lakes and the bay or basin of Arcachon. The eastern part of the dept. is undulating and the soil very fertile. Cereals are grown, but the chief industry is the cultivation of the vine, and there

are vineyards almost everywhere. From here come the varieties of wine known, from the districts in which they are grown, as Graves, Médoc, Sauterne, and others. The climate and soil are also favourable

Robespierre, Marat, and Danton were attacked by the Girondin orators, who, however, lost their support in the country, and fell from power by a *coup d'état* in June, 1793. Twenty-two of them were arrested,

while others fled to the country and stirred up rebellion. After a trial, which was a travesty of justice, 21 of them were executed, Oct. 31, 1793, others being executed later. After the fall of Robespierre a few of them returned to the Convention. See French Revolution.

Girouard, Sir EDOUARD PERCY CRANWELL (b. 1867). British soldier. Born in Montreal, Jan. 26, 1867, he was educated at the Royal Military College, Kingston, and entered the army in 1888. He served with the Dongola expeditionary force, 1896, when

he gained the D.S.O., and in the Nile expedition, 1897. He was rly. traffic manager, Woolwich, 1890-95, director of Sudan rlys., 1896-98, director of rlys., S. Africa, 1899-1902, and, during the next two years, was commissioner of rlys., Transvaaland Orange River Colony.

In 1906 he was A.Q.M.G. of the western command, Chester: high commissioner of N. Nigeria, 1907-8, and governor and commander-in-chief of E. Africa, 1909-12. In 1912 he joined the board of Armstrong, Whitworth & Co. When Lloyd George became minister of munitions in May, 1915, he appointed Girouard his chief organizer, with the title of director-general of munitions supply. He was created K.C.M.G. in 1900, and wrote *A History of Railways during the War in S. Africa*.

Girtin, Thomas (1775-1802). English water-colour painter. Born in Southwark, Feb. 18, 1775, he received lessons from Edward Dayes (1763-1804), and frequently accompanied J. M. W. Turner to



Gironde. Map of the French department on the Bay of Biscay, showing the estuary of the Dordogne and Garonne rivers

for fruit-growing generally, while many cattle are reared. Bordeaux is the capital of the department, which is divided into six arrondissements. Other towns are Blaye, Arcachon, Libourne, Pauillac, and St. Macaire.

Girondins or **GIRONDISTS.** Name given to one of the political parties of the French Revolution. It was given because several of its early members had represented the dept. of Gironde in the legislative assembly. Brissot (*q.v.*) was their leader; hence they were sometimes called Brissotins. Other prominent members were Condorcet, Barbaroux, and Vergniaud, while Madame Roland was a great influence in the party.

The Girondins originated in a schism in the Jacobin Club, first appearing in 1791. They were then the more moderate section of the Republican party, and in March, 1792, being the largest group in the assembly, Louis entrusted them with the control of affairs, and they declared war on Austria. Although both parties were in favour of destroying the monarchy, the struggle between the Girondins and the other Jacobins called the Mountain came to a head in the National Convention, in which the former were about 180 strong.



Sir Percy Girouard, British soldier
Elliott & Fry

sketch on the Thames side. He was the founder of the modern school of painters in water colours. He died



J. M. W. Turner
After J. Oyle

of consumption, in the Strand, London, Nov. 9, 1802. Turner said, "Had Tom Girtin lived I should have starved," and Ruskin allows that Turner "owed more to his teaching and companionship than to his own genius in the first years of his life." Girtin's broad, simple manner, his pure, deep, harmonious colouring, his handling of masses, his mastery of aerial effects, and his sense of tone and feeling entitle him to a foremost place in the English school. Most of his best works—such as the White House, Chelsea, and Battersea Reach—are in private hands, but he is adequately represented at the British Museum. See *Life*, L. Binyon, 1900.

Girton College. College at Cambridge for the higher education of women. Founded in a house at



Girton College badge

Hitchin, Oct. 16, 1869, almost the first of its kind, it was removed to Cambridge, Oct., 1873. The founders included Miss Emily Davies and Mme. Bodichon. The name is that of a village just outside Cambridge where buildings, since enlarged, for the college were erected facing the old Roman Via Devana. It has a strong staff of lecturers and tutors, accommodation for 150 students, and grounds of 33 acres.

Girvan. Police burgh and market town of Ayrshire, Scotland. At



Girton College, Cambridge. The main buildings, designed by Alfred Waterhouse, 1872

the mouth of the Girvan in Ayrshire, it is a station on the Glasgow and S.W. Rly. It is 63 m. S.W. of Glasgow and 21 S.W. of Ayr. The chief industry is fishing. The town has a harbour. It is



Girvan, Ayrshire. The town and parish church from the harbour

visited in the holiday season, and there are a golf course, tennis courts, and other attractions. It is the nearest town to the Turnberry golf courses, 5 m. by rly. or road. The river after which it is named has a course of 35 m., and flows through the fertile vale of Girvan from its starting point in a small loch called Girvan Eye. Market day, Mon. Pop. 4,473.

Gisborne. Port of North Island, New Zealand, in Cook co. It stands on Poverty Bay, and has daily steamer communication with Napier. A fine town, the centre of a rich pastoral and agricultural district, it has freezing works, and exports wool and mutton. Here Captain Cook first landed in New Zealand in 1769. Pop. 12,660.

Gisors. Town of France, in the dept. of Eure. It lies 44 m. by rly. N.W. of Paris, on the river Epte. It is noted for its castle, built by Henry I and enlarged by later

and some towers, around which are public promenades. Gisors being a town on the frontiers of Normandy, the English and the French fought continually for it. The chief church is S. Gervais, part of which dates from the 13th century. Other public buildings are the hôtel de ville,

formerly a convent, and a hospital. In the Middle Ages, Gisors was the capital of the county of Vexin. Pop. 5,508.



Gisborne, New Zealand. The North Island port at the mouth of the Turanganui river

By courtesy of Dominion of New Zealand Government

Gissing, GEORGE ROBERT (1857–1903). British novelist. He was born at Wakefield, Nov. 22, 1857, and educated at Owen's College, Manchester. After spending some months in America he returned to Europe in 1877, and in 1878 published a Werther-like romance called



George Gissing

Workers in the Dawn, the result of some months of study at Jena. In 1882 he became tutor to Frederic Harrison's sons, and subsequently brought out three novels, *The Unclassed*, 1884; *Demos*, 1886; and *Thyrza*, 1887; all concerned with the suffering of sensitive souls in sordid environment.

More able, but equally joyless, novels were *The Nether World*, *New Grub Street*, *Born in Exile*, and *The Odd Women*. A scholar of parts and a man of sound critical judgement, Gissing's charming personal qualities and tastes are revealed in his monograph on Charles

kings of England, when they ruled this part of France, and by Philip Augustus after it had been recovered by him. The remains include the donjon, built on an artificial mound, the outer walls,

Dickens, 1898; in *By the Ionian Sea*, 1901; in *The Private Papers of Henry Ryecroft*, 1903, a semi-autobiographical volume; and the posthumous *Veranilda*, 1904. He died Dec. 28, 1903. See George Gissing: *A Critical Study*, F. A. Swinnerton, 1912.

Giurgevo or **GIURGIU**. A town of Rumania, in Wallachia. It stands on the Danube, facing Rustchuk, 38 m. S.S.W. of Bukarest. It is the port for the capital, with an extensive shipping trade. The exports consist of grain, petroleum, and salt. Formerly fortified, it was founded by Genoese colonists in early medieval times. It has figured prominently during the wars of the Russians and Turks, and was captured by the Germans, Nov. 27, 1916. See *Rumania, Conquest of*, Pop. 15,200.

Giuseppe Garibaldi. Italian armoured cruiser. She was torpedoed by an Austrian submarine in the Adriatic, July 18, 1915. She was 346 ft. long, 59 ft. in beam, displaced 7,400 tons, and had engines of 13,500 horse power, giving a speed of 20 knots. Her armour was 6 ins. thick; she carried one 10-inch, 14 6-inch, and 20 smaller guns, and four submerged torpedo tubes. See *Adriatic Sea, Operations in the*.

Giusti, GIUSEPPE (1809-50). Italian poet. Born at Monsummano, near Florence, May 12, 1809, he early won recognition for his brilliant work in political satire, which previously had been little cultivated in Italian literature. Owing to their revolutionary sentiments his poems were not printed until after 1848, but they were freely circulated in manuscript. He displayed his power as lyric satirist successively in *La Ghigliottina a vapore*, 1833; *Il Dies Irae*, 1835 (on the death of the emperor Francis II); *Lo Stivale*, 1836; *Il Brindisi di Girella*, 1840; *Il Papato del Prete (Pero)*, 1845; *Il Gingilino*, 1845 (describing the corruption of Florentine society); and *Una Messa in Sant' Ambrogio*, 1847.

The use he made of idiomatic Tuscan heightens the effect of his work to his countrymen, but renders it more difficult to foreign readers. In 1848 Giusti became a member of the Tuscan chamber of deputies, and died at Florence two years later, May 31, 1850. Several of his poems are brilliantly rendered into English in *Modern Italian Poets*, W. D. Howells, 1887. See *Giusti and His Times*, Susan Horner, 1864.

Givenchy. Village of France, in the dept. of Pas-de-Calais. Sometimes known as *Givenchy-lez-la-Bassée*, it is 2 m. W. of La Bassée

and 1 m. S.E. of Festubert. Prominent in the Great War, it was the scene of a considerable battle, Dec., 1914. Although the objective of the Germans throughout the war, it was firmly held by the British. Fierce fighting took place here in 1915. In April, 1918, the Germans made determined but unsuccessful attacks on it in their great drive to the Channel ports, which were defeated by the efforts of the 55th (West Lancashire) division, April 9-14, and later by the British 1st division. (See *Ypres, Battles of*).

There is a village known as *Givenchy-en-Gohelle* also in the dept. of Pas-de-Calais, 5 m. S.W. of Lens. The French were engaged here with the Germans, Sept., 1915, and Jan.-Feb., 1916. It was captured by the British on April 13, 1917, in the third battle of Arras.

Givenchy, BATTLE OF. Fought between the British and Germans, Dec. 16-22, 1914. In early Dec., 1914, the eastern outskirts of the village of Givenchy were held by German troops of Prince Rupert's 6th army. The Allied forces engaged in this section were troops of the Indian corps under Lt.-Gen. Sir James Willcocks, with, to the S. of them, French troops under Gen. Foch. On Dec. 16 an unsuccessful attempt was made to carry a part of the German trenches near Givenchy. On the following day, to assist the French, then heavily engaged at Arras, orders were issued to demonstrate and occupy the Germans.

Early in the morning of Dec. 19, two battalions of the Lahore division attacked and captured two lines of German trenches, but were driven back with serious loss by counter-attacks. An attack further to the N., in the neighbourhood of Festubert, was not more successful. On Dec. 20, the Germans, who had brought up reserves, violently bombarded the Indian front, and delivered a counter-attack. Heavy rain had washed away the fire-step in many places and left the trenches knee or waist-deep in mud and water, which clogged the rifles.

The main German attack was delivered against the Indian trenches near Festubert and the village of Givenchy. Most of Givenchy was lost, but in the

evening it was recovered by two English battalions. At other points the Germans drove salients into the British line, and at moments it looked as though a break-through were possible. They were greatly aided in their assaults by the superiority of their bombs. On Dec. 21 the position was still critical when Sir D. Haig, commanding the 1st corps, moved with the 1st division to relieve the Indian corps and beat back the Germans; by nightfall after very fierce fighting he held Givenchy firmly, and had recovered the trenches lost at Festubert.

The battle died out on Dec. 22, with little change in the position. The Indian troops fought with gallantry and steadiness which received the praise of Sir John French, but they were ill equipped, had an inferior artillery, were worn out, and had suffered heavy casualties. In all, to the end of Dec., 1914, they sustained a loss of 1,397 killed, 5,860 wounded, and 2,322 missing (most of whom were killed), and their units were exceedingly weak. Before the battle they had had seven weeks of almost incessant trench war. The British casualties in the battle were 4,000, the Germans probably lost 2,000.

Givet. Town of France, in the dept. of Ardennes. It stands on both sides of the Meuse, just before Belgium is reached. It has a number of small industries, including tanning, and is a river port; but its interest is mainly historical, as it was once a famous fortress. Of its fortifications the only remaining building is the citadel, the others having been pulled down in 1892. This stands on a rock, and as it was founded by the emperor Charles V, is known as *Charlemont*. There is a town hall, several churches, and a stone bridge across the river. Givet was in the Spanish Netherlands until it became French about 1680. Pop. 7,000.



Givet, France. Looking down upon the Meuse from the ramparts of the old citadel

Givors. Town of France, in the dept. of Rhône. It lies about 14 m. S. of Lyons, with a station on the Paris-Lyons-Mediterranean line, on the right bank of the Rhône at the confluence with the river Gier. The town's chief industries are metal working and glass-bottle manufactures, and there is considerable trade in silk and coal. Pop. 12,784.

Gizeh OR **GHIZEH.** Prov. of Lower Egypt. It contains the districts of Ayat, Es Saff, Embaba, and Gizeh. Area, 398 sq. m. Pop. 524,352.

Gizeh. Town of Egypt. It stands on the left bank of the Nile, opposite the island of Roda, just above Cairo. Here is the palace of Gizeh, erected by the khedive Ismail. In the neighbourhood are the Pyramids. Pop. 18,714. See Egyptian Art, colour plate.

Gizzard (Lat. *gigéria*, poultry entrails). Term used in comparative anatomy for that portion of the alimentary canal which is specially designed for grinding food. Hence it is usually found in such animals as swallow food whole without mastication. It is well seen in the domestic fowl, where the action of its muscular walls is aided by bits of gravel swallowed by the bird. Many crustaceans and insects possess gizzards.

Glace Bay. Town and port of Cape Breton Island, Nova Scotia, Canada. A station on the Sydney and Louisbourg Rly., it is 14 m. from Sydney, with which it is also connected by electric rly. Around it are coal mines, and its industries include machine and rly. shops and fishing. It has a wireless station, and is a market for the produce of the neighbourhood. Pop. 16,562.

Glacial Period. Name given to one of the great stages of development in the earth's history. It is the earlier of the two subdivisions of quaternary time. See Ice Age.

Glacier (Fr.). Moving mass of ice. The edge of the permanent snow, the snow-line, varies in elevation from sea level in Antarctica to 2,500 ft. in Alaska, 8,500 ft. on the Alps, and 16,000 ft. on the S. side of the Himalayas.

As the snow above the permanent snow-line accumulates, the lower portions, adjacent to the rock, slowly change into ice; and when the mass of ice and snow becomes sufficiently thick it begins to make new adjustments to the land contours, and to move down the slopes. When the moving mass follows a definite path down a mountain valley, it is a glacier.

The physical changes which occur when ice moves under pressure have not been precisely determined. Owing to irregularities in the rock



Glacier. The Mer de Glace, near Chamonix, 4½ miles in length; the glacier which moves down the north side of Mont Blanc

contour, deep cracks or crevasses occur in the upper glacier layers; they are sometimes hidden by a thin snow bridge, and are a source of ever-present danger. In its passage downwards, a glacier accumulates large quantities of rocks. Some of these sink into the mass of ice; others are moved to the margins of the glacier because the middle moves more rapidly than the sides. The débris of the edges is known as lateral moraines.

The snout of a glacier occurs where the temperature melts the ice as fast as it is brought down; in many cases the snout advances or retreats during different periods. From the snout a turbid, milky-looking torrent rushes down the valley, and when the snout retreats it leaves rock débris, which forms a terminal moraine.

Types of Glacier

Glaciers have been classified into four types: (1) valley glaciers; (2) piedmont glaciers; (3) ice caps; (4) continental glaciers. Valley glaciers occur in the Alps, where the Aletsch is 10 m. long and 1 m. wide; in the Caucasus, Andes, Himalayas, and among the coast mts. of Alaska, where the Muir glacier is 35 m. long and from 6 to 10 m. wide. Alpine glaciers terminate on land, but the Alaskan glaciers reach the sea, and portions break off and float away as icebergs. The rate of movement of some valley glaciers has been measured; the Mer de Glace in France moved during the warm season from 1 ft. to 1½ ft. a day along the margin, and about 2 ft. daily in the middle; the Muir glacier moved 7 ft. daily in the middle. The rate varies with the season, and from year to year.

Piedmont glaciers occur when a valley glacier pushes out on to a nearly level area at the base of the mountains. The Malaspina piedmont glacier, fed by numerous valley glaciers, is 70 m. by 25 m.

Formation of Icebergs

Ice caps occur in Iceland; the largest is at Vatna Jökull. In this case the ice moves very little, owing to the level character of the rock contours. Extensive ice caps are called continental glaciers, or ice sheets. Greenland and Antarctica are both covered with ice formations of this type. The great depth of the ice sheet causes outward movement, and in Antarctica the great ice barrier, an ice cliff margin to the Ross Sea, is 500 m. in length, and rises sheer from the water to heights from 30 ft. to nearly 300 ft. The Greenland continental glacier is steadily pushing seawards, the tongues of ice project into the water, in some cases with a front 60 m. in width. These tongues move at rates between 5 and 75 ft. per day, and are constantly losing great blocks, which feed the never-ending stream of bergs in the N. Atlantic.

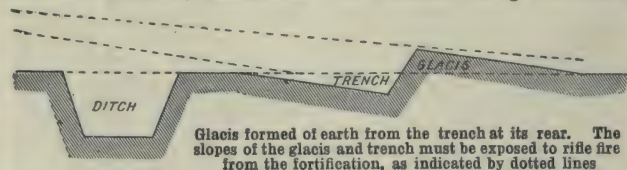
The various signs left by retreating glaciers—terminal moraines, layers of glacier silt (till or boulder clay), isolated rock fragments, rounded rocks (*roches moutonnées*), striations upon rock faces, etc.—are so common in Britain N. of the Thames, and in Europe, N. of Bohemia, that it is concluded that most of Europe has been covered at least once by a continental glacier of Antarctic magnitude. See Finsteraarhorn; Geology; Ice Age; consult also Glaciers of the Alps, J. Tyndall, 1896; Ice-Work, Present and Past, T. G. Bonney, 1896.

Glacis (Fr. *glace*, ice). Ground in front of a fortification which is within close rifle range. In permanent fortresses the glacis are frequently artificially constructed

who engaged in combat with others or with wild beasts. Such combats appear to have been a common feature of funeral ceremonies among the Etruscans, being doubtless a

tors. As the procession passed the Emperor's seat, the gladiators cried *Ave Caesar, morituri te saluant* (Hail, Caesar, those about to die salute thee). When one combatant was overcome but not killed by another, the spectators, by turning their thumbs up (or against the breast) or down, determined the fate of the beaten gladiator. The exact significance of the action is disputed. Lytton's *Last Days of Pompeii* and Henryk Sienkiewicz's *Quo Vadis?* contain striking descriptions of gladiatorial combats. See *Amphitheatre*.

Gladiolus (Lat., little sword). Beautiful flowering bulbs of the natural order Iridaceae. Most of



Glacis formed of earth from the trench at its rear. The slopes of the glacis and trench must be exposed to rifle fire from the fortification, as indicated by dotted lines

slopes, built at a considerable gradient, so that the attackers can only proceed up them slowly, whilst exposed to close range rifle fire. The term is also used to describe a sloping protective plate on a battleship, to deflect hostile shell by causing them to ricochet instead of exploding or penetrating. See *Fortification*.

Gladbach. Name of several places in Germany. The most important is München-Gladbach, in the Prussian Rhine prov., 16 m. by rly. W. of Düsseldorf. It had its origin in a Benedictine abbey founded here in 972, and suppressed in 1802. The industries include textiles, iron, machinery, etc. The principal church is the Münster Kirche, the choir of which is attributed to Gerard, the designer of Cologne Cathedral. There is a museum of antiquities, and the nucleus of a textile collection. Pop. 66,414. Bergisch-Gladbach is a small town, also in the Rhine prov., about 8 m. E.N.E. of Cologne. It manufactures iron goods, paper, and machinery. Pop. 15,207.

Gladden, WASHINGTON (b. 1836). American author and preacher. Born at Pottsgrove, Pennsylvania,



Feb. 11, 1836, in 1860 he was appointed pastor (Congregational) at Brooklyn, N.Y. From 1882-1914 he was pastor of the First Congregational Church, Columbus, Ohio. He was the author of many books on life and conduct, including *Amusements: Their Uses and Abuses*, 1866; *Plain Thoughts on the Art of Living*, 1868; *Working-men and Their Employers*, 1876; *The Young Men and the Churches*, 1885; *Art and Morality*, 1897; *The Forks of the Road*, 1917. He published his *Recollections* in 1909.

Gladiator (Lat. *gladius*, sword). Term applied among the ancient Romans to a professional fighter

reminiscent of human sacrifice. The custom was introduced into Rome in 264 B.C., and gladiatorial combats in amphitheatres became a recognized amusement, attaining the zenith of popularity under the Empire. Gladiators were recruited from prisoners of war, criminals, and volunteers, the latter chiefly young men in financial difficulties. Schools existed for training them, and the wealthy men of fashion took the same pride in maintaining a school that his modern counterpart takes in maintaining a racing stable.

There were several different classes of gladiators, such as the *bestiarius*, who fought with wild beasts, and the *retarius*, who was armed with a trident and a net (*rete*) in the meshes of which he endeavored to entangle his opponent. Other gladiators were the *mirmillo*, whose helmet was adorned with the figure of a fish, and was usually opposed by the *Threx*, wearing a Thracian equipment, a round shield and a short sword; the *andabata*, who fought on horseback and wore a helmet which entirely covered the face; the *laquearius*, who carried a lasso to catch his adversary. A gladiatorial display in the amphitheatre began with a procession of gladi-



Gladiolus. Flowers and leaves of the garden variety

them are natives of South Africa, though some Turkish species were introduced as long ago as 1596. They flower from June to Oct.,



Gladiator. Scene in the arena, by J. L. Gérôme, who adopted the view that "thumbs down" was a signal for the dispatch of the vanquished

Steuart Collection, New York

bearing a number of blossoms on stiff, almost upright, spikes. The corms, or bulbs, should be planted in springtime, about 4 ins. deep in ordinary rich soil, with a dash of silver sand at the base of each bulb.

It is advisable to dig them up after flowering, in late autumn, and keep them in a cool, dry place until the following spring. For show purposes they may be forced by potting up in Nov., in a temperature averaging 60°. They are propagated from seeds sown in pans in Feb., or by bulblets separated from the parent corm and planted out of doors in early spring.

Gladstone. Town of Queensland, Australia. It stands on the fine natural harbour of Port Curtis, 354 m. N. of Brisbane. It is the outlet of a number of mining areas producing gold, silver, and manganese, and is in a rich pastoral district. Pop. 1,294.

Gladstone, HERBERT JOHN GLADSTONE, 1ST VISCOUNT (b. 1854). British politician. Born Jan. 7, 1854, the youngest son of W. E. Gladstone, he was educated at Eton and University College, Oxford. He distinguished himself in history, and was for a few years history lecturer at Keble College. In 1880 he was returned for West

Leeds, and became private secretary to the premier. From 1881-85 he was a lord of the treasury, and in 1886 financial secretary to the war office.

From 1892-94 he was under-se-

cretary for home affairs, and in 1894-95 first commissioner of works. In 1899, during the Liberal split, Gladstone undertook the thankless office of chief whip, and was rewarded in 1905 by being made home secretary. In 1909 he was chosen governor-general of S. Africa, and made a viscount. He remained there until 1914, and during the Great War was an active worker on behalf of the Belgian refugees.

Gladstone was one of a family of four sons and four daughters. His eldest brother, William Henry Gladstone, M.P., died July 4, 1891, leaving an only son, W. G. C. Gladstone, M.P. The other brothers were Henry, who entered business life, and Stephen, rector of Hawarden, who died April 23, 1920. A sister Helen was principal of Newnham College, Cambridge, 1882-96.

WILLIAM EWART GLADSTONE

Right Hon. G. W. E. Russell, Author of *W. E. Gladstone*

For the political events with which Gladstone was associated see United Kingdom; National Finance; Ireland; Home Rule, etc. See also articles on Victoria; Beaconsfield; Palmerston; Peel; Russell, and other contemporaries

William Ewart Gladstone was born at 62, Rodney St., Liverpool, Dec. 29, 1809. He was the youngest son of Sir John Gladstone, Bart., M.P. (1764-1851), by his marriage with Anne Robertson, and he was accustomed to say that there was not a drop of blood in his veins that was not Scottish. The family was a Lanarkshire one, but Sir John had settled in Liverpool, where he made a fortune.

Gladstone spent his early years mainly at Seaforth, where he had a private tutor. In 1821 he went to Eton, where he remained until 1827. He then read with a tutor at Wilmslow, and in Oct., 1828, went to Oxford, entering Christ Church, where in 1829 he obtained a studentship. "At Eton," said Bishop Hamilton, "I was a thoroughly idle boy, but I was saved from some worse things by getting to know Gladstone." At Oxford his high character was equally apparent.

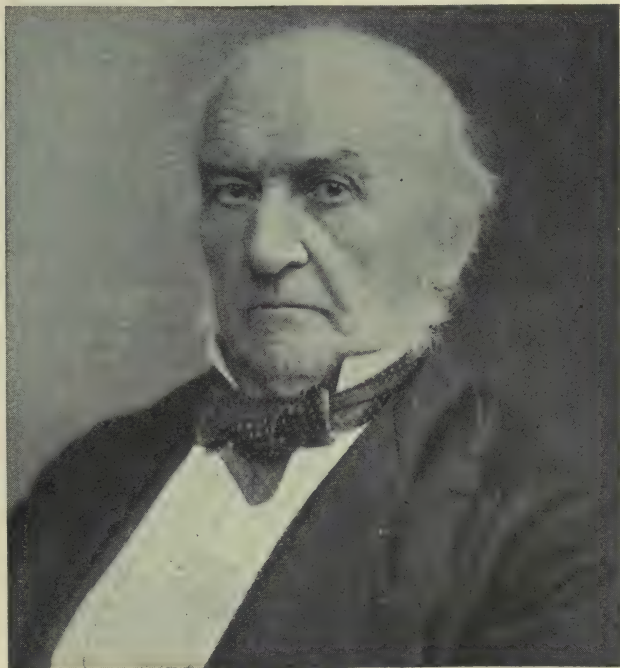
At Christmas, 1831, Gladstone took his degree, a double first, and then came the choice of a profession. Relieved from the necessity of making his own fortune, he turned his attention to the Church. But his father had resolved to make him a politician, and the paternal will prevailed. A seat was easily found for the young Tory, who at Eton, and still more at Oxford, had shown a distinct gift for public speaking. At the general election in Dec., 1832, he was elected for Newark, and in Jan., 1833, he took his seat in the first reformed parliament. In 1834 he was appointed by Peel a junior lord of the treasury, and in 1835 he became under-secretary for the Colonies. In a few weeks, however, his party was out of office.

In 1841, when the Tories returned to power, Gladstone was made vice-president of the board of trade. He became acting president in 1843, entering a cabinet



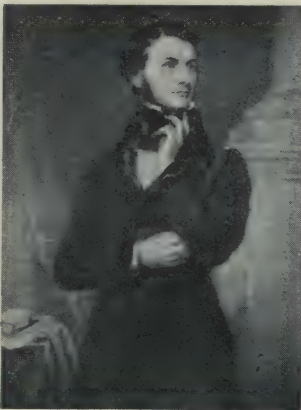
W. Gladstone

Russell



From a photograph by London Stereoscopic Co., taken in 1888

W. Gladstone



W. E. Gladstone at the age of 30

After W. Bradley

for the first time. In 1845 he left office because he disliked the additional public grant to the Roman Catholic college at Maynooth, but at the end of the year he returned to become secretary for war and the Colonies. In July, 1846, the ministry resigned. In 1847 Gladstone was returned for the university of Oxford, but for a few years his political position was not very clear. He was not completely committed to the Peelites, but he had broken with the Toryism of his youth. In 1851 he wrote from Italy his letters denouncing the Bourbon king of Naples.

Gladstone's First Budget

On Dec. 2, 1852, Gladstone became chancellor of the exchequer, joining the ministry of Lord Aberdeen. In April, 1853, he introduced his first budget, and the changes in the direction of simplicity therein proposed marked him out as a great financier. Then came the Crimean War, the resignation of Lord Aberdeen, and a few weeks later (Feb., 1855) that of Gladstone. While in opposition he acted as high commissioner for the Ionian Islands. In 1859 the Conservative

ministry was defeated, and Palmerston, under whom Gladstone had served for a few days in 1855, became premier. Gladstone returned to the exchequer and for seven years was responsible for the finance of the country. In one of his budgets he abolished the paper duty, overcoming the resistance of the House of Lords, and his achievements during this period mark him as the pioneer financier of democracy.

Gladstone was now the most able and active member of the cabinet. In 1865 he succeeded Palmerston as leader of the House of Commons, Russell becoming prime minister, and he was in charge of the rejected reform bill of 1866. The Russell ministry then resigned, and in 1867 Gladstone became the leader of the Liberal party. About the same time Disraeli succeeded Derby, and the two great rivals became the chief



The house in which Gladstone was born, 62, Rodney Street, Liverpool

figures on the political stage. The general election of 1868 was fought largely on the issue, pushed to the front by Gladstone, of the disestablishment of the Irish Church. The Liberals were returned to power, and although he promised to repeal the income tax his party was defeated, and for six years was in opposition.

Chagrined, Gladstone decided to retire from political life, and in 1875 he was succeeded as Liberal leader by Lord Hartington, but he kept his seat in the House of Commons,



Mrs. Gladstone, from a photograph taken in 1888

London Stereoscopic Co.

and events, or his own desires, soon called him again to the front. The Turkish possessions in the Balkans became the scene of savage fighting, and with the fervour of a crusader Gladstone carried on a campaign against Turkish misrule and cruelty. He did not actually resume the party leadership, but when the general election of 1880 came he was the protagonist of the opposition to the Conservative policy, and his speeches, the famous Midlothian campaign, were mainly responsible for the Liberal victory. He then became M.P. for Midlothian, retaining that seat until his retirement. He had also been elected by Leeds, a seat taken by his son Herbert.

The Second Premiership

Gladstone was now at the height of his influence. No other prime minister was possible, and he took that office a second time in April, 1880, being chancellor of the exchequer as well as first lord of the treasury until 1882. There were difficulties in Ireland and in Egypt, which were not helped by the constant dissensions in the cabinet. The Phoenix Park murders, and the death of Gordon, weakened the position of the ministry, but it held on until 1885. Then came a general election, at which neither party gained a clear majority, and Gladstone's sudden declaration in favour of Home Rule.

In Feb., 1886, the Conservative ministry was beaten and Gladstone took office for the third time as premier, but the defection of some of his party led to the defeat of his Home Rule bill and to another election, on which he was defeated. The next election came in 1892, and by a small majority the Liberals were returned to power.



Hawarden Castle, Flintshire, for 60 years the residence of W. E. Gladstone

The House of Lords, however, rejected Gladstone's second Home Rule bill, but it was not this, but the size of the navy estimates, that led to his resignation in March, 1894. He retained his seat until 1895. In spite of his great age, and his failing eyesight, he spent his concluding years mainly in his study, working on two subjects he loved, Homer and Butler. He appeared in public



Gladstone Bag. Type of portmanteau named after W. E. Gladstone

in Sept., 1896, to denounce the Armenian massacres. He died at Hawarden, May 19, 1898, and was buried in Westminster Abbey.

In 1839 Gladstone

married Catherine, sister and heiress of Sir Stephen Glynne, 9th baronet. Through this marriage the castle and estates of Hawarden passed into the Gladstone family. On the statesman's death it came to his grandson, W. G. C. Gladstone, M.P., who was killed in action, April 11, 1915.

Lord Morley coined an admirably descriptive phrase when he spoke of "those incomparable physical gifts which seemed to encase a soul of fire in a frame of pliant steel." After a life of active service prolonged far beyond the appointed limit, and spent either in strenuous labour or in recreations scarcely less laborious, Gladstone could walk to the summit of Snowdon when he had turned eighty; and, when blindness and deafness had disabled him, the stethoscope could detect nothing amiss in heart or lungs. He seemed incapable of fatigue. From work, even the most exhausting, he required only change of occupation.

By common consent Gladstone ranks as one of the great orators of the 19th century, and perhaps its greatest parliamentarian. A clear and beautiful voice, a generous flow of language, and above all a burning belief in the cause he was at the moment advocating, account for his power to sway the multitude. He was also great as a finance minister, where his lucidity of expression, grasp of detail, and capacity for work found full play. As premier he was hardly so successful, although at one time the Liberal party seemed to have no existence apart from his dominating personality. His vehement nature was not suited to the calm and calculated thought and action so necessary in foreign affairs, while his imperiousness made it difficult for others to work with him. He had also a great love of power. See Furniss, H.

Bibliography. W. E. Gladstone, G. W. E. Russell, 1891; Gladstone, a Study from Life, H. W. Lucy, 1895; Life, H. Paul, 1901; Life, John Morley, 1903 and 1905; Religious Life of Gladstone, D. C. Lathbury, 1910.

Gladstone Bag. Light portmanteau named after W. E. Gladstone. It is made of leather, etc., with yielding or flexible sides, stretched upon a metal frame, hinged at the bottom so as to open flat into compartments.

Gladwyn (*Iris foetidissima*), FOETID IRIS, OR ROAST-BEEF PLANT. Perennial herb of the natural order Iridaceae. It is a native of W. Europe. The rootstock is thick and creeping, the leaves 2 feet long, sword-shaped, erect and dark green, the flowers dull blue-purple, with darker veins,



Gladwyn or Gladston. Fruit and inset, flower of *Iris foetidissima*

about 3 ins. across. The club-shaped capsule splits into three spreading sections, late in autumn, disclosing the bright orange, round seeds, which make the plant more conspicuous than when in flower.

Glaisher, JAMES (1809-1903). British aeronaut. Born in London, April 7, 1809, he was employed on the Irish ordnance survey, and in 1833 received an appointment at Cambridge observatory, which he left three years later for Greenwich. He founded the Meteorological Society in 1860, and six years later helped to found the Aeronautical Society. In a balloon ascent, Sept. 5, 1862, Glaisher and Coxwell reached a height of 27,887 ft. to 28,543 ft. Glaisher wrote

largely on aeronautics and meteorology, his best known works being Meteorology of England, 1860;



James Glaisher, British aeronaut
Elliot & Fry

Travels in the Air, 1870; and Crystals of Snow, 1872. He died Feb. 7, 1903. **Glamis.** Village and parish of Forfarshire, Scotland. It stands on Glamis Burn, 6 m. W.S.W. of Forfar, and is served by the Cal. Rly. In the village is a sculptured stone, said to be a memorial of Malcolm II. Near the village is Glamis Castle, a seat of the earl of Strathmore. The present building, dating mainly from the 17th century, is in the Scottish baronial style, with parts of a much older building. Glamis is steeped in history and legend. Here Macbeth is said to have lived and Malcolm II. to have been slain. *Pron. Glahms.*

Glamorganshire. County of S. Wales. It lies along the Bristol Channel, its other boundaries being the counties of Carmarthen, Brecknock, and Monmouth. Owing to the development of the rich coalfields, it has become one of the great industrial centres of the country, and is much the most populous co. of Wales. The chief mining area is in the valleys that run down to the sea around Cardiff, while there is another industrial area around Swansea. Between Rhymney and Neath is the agricultural region known as the vale of Glamorgan. The Gower peninsula in the W. is in some respects quite apart from the rest of the co.; on it are Worms Head and the Mumbles Head. Swansea Bay and Burry Inlet are the chief openings.



Glamorganshire arms



Glamis Castle. The Forfarshire seat of the Earl of Strathmore



Glamorgan. Map of the county in which are situated the principal coal-fields of South Wales

The chief rivers are the Taff, the Tawe, Cynon, Ogwr, Rhondda, Rhymney, all short and flowing southwards. In the N. of the co. are mts., a continuation of those in Brecknockshire, the highest point being nearly 2,000 ft. high. There is some beautiful scenery, especially in the vale of Neath, with its series of waterfalls. Cardiff, Swansea, and Merthyr Tydfil are the largest towns.

The chief industry is coal-mining, which has developed enormously since about 1850; older are the tinplating and smelting, which made Swansea and Merthyr Tydfil. There is a good deal of agriculture carried on, especially in the vale of Glamorgan, where the soil is rich.

The county, known to the Welsh as Morganwg, was conquered by the Normans in the 11th and 12th centuries, and several castles were built here as defences against the Welsh from the N. Monasteries were founded at Neath, Margam, and elsewhere, and Glamorgan-shire, smaller than it is to-day—for Gower was outside it—was a co. palatine. Cowbridge, Kenfig, Llantrisant, Neath, and Aberavon became chartered towns. The earls of Gloucester and then other baronial families were lords of Glamorgan, and in the time of Edward VI the title was given to William Herbert, who afterwards became earl of Pembroke.

The ruined castles in the co. include Caerphilly, Oystermouth, Llanblethian, Penarth, and Swansea. Cardiff, St. Donats, Dunraven, and Penrice have been restored, and are now inhabited. Ewenny has a fine church and ruins of an abbey. The co. area is 487,329 acres, or just over 800 sq. m., and the pop. 1,252,701. It sends seven members to Parliament.

Glamour. Word meaning fascination or enchantment. It implies power to make things seem more pleasant or attractive than they really are. Originally it meant a kind of spell by which a person was brought under the control of another. The word is a corruption of grammar, meaning first a knowledge of grammar and then a knowledge of magic. See Hypnotism.

Gland (Lat. *glands*, acorn). Organ of the body which secretes fluid or material essential for the maintenance of health.

Glanders (Lat. *glandulae*, glands). Disease of horses due to infection by a bacillus (*B. mallei*). In rare instances it is communicated to man by contagion, usually through an abrasion of the skin. When the lymphatic glands and vessels are involved, the disease is known as farcy. In the horse the lungs are always affected, and frequently the nasal mucous membrane. Nodules form which ulcerate. The enlarged lymphatic glands are known as farcy buds.

In man there is an acute and chronic form of glanders, and an acute and chronic form of farcy. The acute form of glanders begins three or four days after infection. Nodules appear on the mucous membrane of the nose, which rapidly break out into ulcers. A pustular eruption appears on the face, and has led to the condition being mistaken for small-pox. This form is invariably fatal, death usually occurring from pneumonia.

Glanvill, RANULF DE (d. 1190). English lawyer. Born at Stratford, Suffolk, he entered the service of Henry II. In 1163 he was sheriff of Yorkshire, and he was afterwards sheriff of Lancashire. In 1176 he was made a judge and from 1180 to 1189 was chief justiciar of England. Richard I deprived him of

his office and put him in prison, but he is said to have been on crusade at Acre when he died. Glanvill is known by his Treatise concerning the laws and customs of the English kingdom. This is a unique and invaluable account of the subject. He was also Henry's chief helper in the judicial reforms carried out in this reign. The Treatise was first published in 1554.

Glärnisch. Mt. range of Switzerland. In the canton of Glarus, it trends S.W. from the town of Glarus, and has several imposing peaks. The Vorder-Glärnisch, 7,648 ft. in height, is difficult and laborious of ascent. Other peaks are the Ruchen-Glärnisch (9,557 ft.) and the Bächistock (9,582 ft.).

Glarus. Canton of E. Switzerland. It is bounded on the N. and E. by the Walen See and St. Gall, S. by Grisons, and adjoins Schwyz. Area, 267 sq. m. It slopes N. from Mt. Tödi, on which is the source of the Linth. There are several lakes, mineral springs, and fine waterfalls, besides the bold rocky group of the Glärnisch.

An Alpine canton, the climate is somewhat severe and only about one-fifth of the surface is arable. The inhabitants are mostly German-speaking, and mainly Protestants, while the chief industries are connected with textiles, cattle raising, and slate-quarrying. A speciality is the curious green cheese known as Schabzieger, which, as well as ice, is exported. Glarus is the chief town. The canton joined the Swiss Confederation in 1352.

Glarus (Romansch, *Claruna*; Fr. *Glaris*). Town of Switzerland, capital of the canton of Glarus. It stands on the river Linth, overlooked by the imposing Vorder-Glärnisch, 43 m. by rly. S.E. of Zürich. A serious conflagration in 1861 destroyed nearly all the town, which was founded at the end of the 5th century by Fridolin, an Irish monk, and was settled by Germanic tribes. Zwingli (*q.v.*) was parish priest here for 10 years. The chief occupation is the manufacture of textiles. Pop. 5,000.

Glas, JOHN (1695-1773). Scottish divine. He was born at Auchtermuchty, Sept. 21, 1695, and became minister of Tealing, near Dundee, in 1719. Here he founded a sect which became known as the Glassites (*q.v.*). For this he was deposed in 1730, but some years later was again allowed to preach, but not to hold office. He wrote much on religious subjects. His son-in-law, Robert Sandeman, assisted him, and carried his ideas further, founding the sect of the Sandemanians.

GLASGOW: THE CITY AND ITS HISTORY

George Eyre-Todd, Author of *The Story of Glasgow*

This, and the article on Edinburgh, are the most important of those dealing with the Scottish cities and towns. For connected information see Scotland: History. See also Clyde; Dock; Lanarkshire

Glasgow is situated in the centre of the great industrial valley of the Clyde, 47 m. W. of Edinburgh and 23 m. by rly. and river from the open sea at Greenock. It is the largest city in Scotland and the second largest in the United Kingdom, having a population in 1921 of 1,034,174.

It is served by three trunk lines of rly., Glasgow & South Western, North British, and Caledonian, and is built on a number of hills on both sides of the Clyde, the oldest part being on the north side.

The city's chief buildings include the cathedral, dedicated to S. Mungo (also known as S. Kentigern), built 1197-1446, and afterwards restored. Its crypt and chapter house are notable. Almost alone of similar edifices in Scotland, it escaped destruction at the Reformation, but apart from it, Glasgow, unlike Edinburgh, has hardly any remains of its past.

Principal Buildings

Fine modern buildings, however, abound. On George Square are the municipal buildings, a magnificent block in the Italian Renaissance style and surrounded by additions, built for the work of the various departments. The general post office, the Merchants' House and the headquarters of the Bank of Scotland are here. The Royal Exchange in Queen Street is a fine building, and there are many in Buchanan and Sauchiehall Streets. S. Andrew's Halls may be mentioned. The Art Gallery in Kelvingrove Park contains a fine collection of old masters. There are several fine hospitals and infirmaries, including the Royal and Western Infirmaries. Hutcheson's Hospital, instituted for poor men, is a very wealthy foundation, its surplus funds having been put to educational uses. The Mitchell and other public libraries, the observatory, and the botanic gardens call for notice. In addition to the university, there are several colleges for higher education, and special ones for art, technology, and theology, while schools of every size and variety abound.

Features of the city are several bridges across the Clyde, fine modern structures. In George Square and elsewhere are statues of

various eminent men. There are many theatres, picture palaces, and other places of amusement, also football and recreation grounds. The People's Palace on Glasgow Green is a social centre. Of the many parks, Kelvingrove, through which the Kelvin flows, is perhaps the most noteworthy. Others are Queen's, Bellahouston, and Alexandra, and Cathkin Braes. Ruchill Park is outside the city boundaries. Glasgow Green is an older possession, and is, by long usage, the home of popular demonstrations. The Necropolis is a large cemetery finely placed on a hill.

Boundaries and Districts

The city boundaries have been extended from time to time. Just before the Great War, Glasgow was enlarged to include Govan and Partick, hitherto separate municipalities. In addition to these and the city proper, Glasgow includes the residential districts of Kelvingrove and Hillhead, and great industrial areas, such as Bridgeton, Camlachie, Cathcart, Gorbals, Maryhill, Pollokshaws, St. Rollox, Springburn, and Tradeston. There are an abundant supply of water from Lochs Katrine and Arklet, 34½ m. distant, system of electric tramways and suburban rlys., ferries across the river, and a subway beneath. The council maintains, in addition to the supplies of gas, water, and electric power, a great system of sewage, model lodging

houses, etc. The harbour, which includes extensive docks along the Clyde, accessible for the largest vessels afloat, is managed by the Clyde Trust.

HISTORY. Glasgow appears to have been a place of consideration as early as 397, for about that time S. Ninian consecrated a Christian burying-place for its inhabitants. In 543 S. Mungo set up a primitive church on the spot; six centuries later, in 1115, David, afterwards David I, king of Scotland, made the spot the seat of a Roman bishopric; and in 1136 its first bishop, Achais, began the building of its first cathedral.

About 1175 Bishop Jocelin secured the foundation of Glasgow's greatness by procuring a charter making his little city a burgh, and establishing a yearly fair in July which is still held. Two centuries later Bishop Rae built over the Clyde there a stone bridge, which carried traffic to the city for 500 years. One of the bishops, Walter Wardlaw, was in 1385 made a cardinal by Pope Clement VII. In 1491-92 Bishop Blacader had the see raised to an archbishopric.

In 1450-51 James II procured for Bishop Turnbull from Pope Nicholas V a bull constituting a university at the bishop's city on the Clyde. In 1539 Jeremy Russel, a Franciscan monk of Glasgow, and John Kennedy, a youth of eighteen and a promising poet belonging to Ayr, were burned at the E. end of Glasgow Cathedral; and, in the infancy of Queen Mary, Glasgow had its own share in the nation's troubles caused by the religious



Glasgow. Map of the district showing the towns which have grown up around this important centre of commerce and manufacture

quarrels. When, encouraged by Henry VIII of England, the earls of Lennox and Glencairn, chiefs of the Protestant party, seized the bishop's castle at Glasgow, their forces were defeated by the regent Arran on the Gallowmuir E. of the city, and for the part the burgesses had taken Arran hanged the defenders of the castle and steeple, plundered the town, and threatened to reduce it to ashes.

In 1560 James Beaton, the last Roman Catholic archbishop, fled to France, but at that time, when abbeys and cathedrals everywhere went down in ruin, the cathedral of Glasgow alone of all those on the mainland of Scotland remained undestroyed. On the flight of the archbishop, Glasgow seized the common lands, *feued* them to the inhabitants, and declared its right to elect its own magistrate. This right was confirmed by a letter of James VI in 1611, and by charters of Charles I in 1636, and of William and Mary in 1690.

In 1638 Glasgow Cathedral was the meeting-place of the great general assembly which defied the order of Charles I's high commissioner to dissolve, and proceeded to pass the decree abolishing episcopacy in Scotland.

From Glasgow, Graham of Claverhouse rode out with his dragoons to capture the Covenanters who had murdered Archbishop Sharp. After his defeat, it was at Glasgow Cross that he set up barricades and defended himself against the attacks of the Covenanters and their friends, who, upon news of his overthrow, had marched after him to follow up their victory.

By this time the city of Glasgow had become a thriving business centre. Following the rights of fair and market secured by Bishop Jocelin from William the Lion, Bishop Walter in the 13th century obtained from King Alexander II charters protecting the burgh from invasion by the bailies of Rutherglen on the E. and giving the citizens the right of free trade in all the regions of Lennox and Argyll without hindrance from the bailies of Dumbarton.

Birth of Foreign Trade

Glasgow thus began to be the mart for trade with the W. Highlands which it remains to the present day. Its foreign trade is said to have been begun by William Elphinstone, who about 1420 began curing salmon and herring and sending them to France, where they were exchanged for brandy and salt. A hundred years later Archibald Lyon, a son of Lord Glamis, "undertook great adventures and voyages in trading

to Poland, France, and Holland." Considerable jealousy existed between the traders and the merchants of the city till in 1605 Sir George Elphinstone drew up his Letter of Guildry, which fixed the separate rights and powers of the Trades House and the Merchants' House.

In 1656 Cromwell's commissioner reported that, except those connected with the college, all the people of Glasgow were traders, some to Ireland, some to France, and some to Norway. They had even adventured to Barbados, and owned twelve vessels, the three largest being of 150 tons. In 1674 a whale-fishing company was started which had five ships on sea, a blubber and curing factory in Greenock, and a soapworks in Glasgow itself. And in 1686 Walter Gibson began curing the first red herrings, and trading with them to France.

Steamships on the Clyde

But the greatest of all the industries started then was the weaving of cotton, of which the first web produced in Scotland was made by James Monteith in the village of Anderston, near the city, in 1780. Three years later David Dale, with Richard Arkwright, the inventor of spinning by water power, set up his great cotton mills at New Lanark and elsewhere, and soon cotton spinning and cotton weaving were an immense trade.

Great impetus was given to this and other industries by James Watt's improvements in the steam-engine. Following this came the invention of the steamboat by William Symington, who in 1789 had a steamer running at seven miles an hour on the Forth and Clyde canal. After this came the launch of the first passenger steamer, the Comet, on the Clyde in 1812, and so began the great modern steamship industry of Glasgow.

To accommodate this industry the Clyde was gradually deepened. At an earlier day the Glasgow merchants had used Irvine as a port, and, when its harbour silted up, had built Port Glasgow for the purpose. Schemes to deepen the river had been propounded by Smeaton in 1755, and by James Watt a few years later, but it was not till the 19th century that the systematic deepening and clearing of the channel began. Now, instead of a depth of 15 ins. at the Broomielaw, and 2 ft. at Dumbuck ford at low water, it is possible for the largest and heaviest ships in the world to pass down the waterway. Following the rise of the shipping industry, David

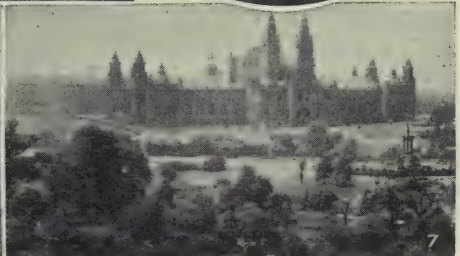
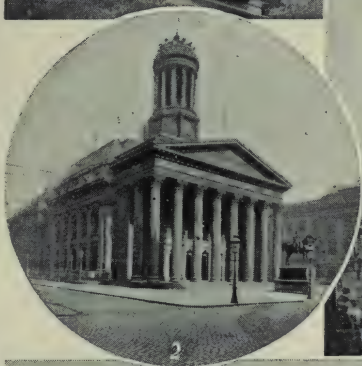
Napier, and afterwards his cousin Robert, set about the building of vessels. These men of enterprise were followed by others, and to-day the whole riverside for many miles is occupied either by docks or by shipbuilding yards.

Trade with America

At the end of the 18th century the enterprise of Glasgow suffered its first staggering blow by the collapse of the great Darien expedition in which the merchants of Glasgow had taken a large share, and part of which sailed from the Clyde. But the union of Scotland and England in 1707 opened up great new possibilities of trade across the Atlantic, which the merchants of Glasgow were prompt to seize. Within five years the number of ships belonging to Glasgow and the Clyde had grown from 21 to 183, and Glasgow was on the straight road to prosperity. Daniel Defoe described the place at that time as "a large, stately and well-built city, standing on a plain in a manner four square; and the four principal streets are the fairest for breadth and the finest built that I have ever seen in one city together. In a word, it is one of the cleanliest, most beautiful and best built cities in Great Britain."

This was the appearance of the city when Prince Charles Edward entered it on Christmas Day, 1745, at the head of his Highland army, on his way back from the march to Derby. On that occasion he levied from the magistrates a large quantity of clothing for his men, and held a review of his troops on Glasgow Green.

INDUSTRY AND COMMERCE. The Glasgow merchants were becoming meanwhile the greatest importers of tobacco in the country. In 1772, of the 90,000 hogsheads of the leaf imported into Britain, Glasgow alone imported 49,000, and many great fortunes were built up by the tobacco lords, as these merchants were called. In 1775 the trade of Glasgow suffered its second great catastrophe by the revolt of the American colonies. When this occurred the American planters were owing the Glasgow merchants a million sterling, and many of the latter were ruined. But already other trades had sprung up. In particular the first sugar house had been established here in 1667. While quartered in the island of St. Kitts two of the king's officers, Colonel William MacDowall and Major James Milliken, had married a mother and daughter, owners of great sugar estates. On returning to Glasgow the two proceeded to develop the sugar trade with



1. The Cathedral and, on the left, Royal Infirmary and Barony Church. 2. Royal Exchange, built by David Hamilton, 1837-40. 3. George Square, showing the Municipal Buildings and, in the centre of the square, the

Scott Monument. 4. The University, designed by Sir Gilbert Scott, 1868. 5. Mitchell Free Library, founded by Stephen Mitchell (d. 1874). 6. Broomielaw Bridge, opened in 1899, from the south. 7. Art Gallery from

GLASGOW: THE INDUSTRIAL METROPOLIS OF SCOTLAND

1, 2, 4, 5, and 7, T. and R. Annan. - 6, Photocrom



Glasgow. Plan of the city, showing the principal buildings, railway stations and docks, and the inner suburbs

energy, and following their example a great business began.

A type foundry was also established by Alexander Wilson, from which, in 1741 and onwards, the brothers Foulis, printers to the university, procured the type for their famous editions of Latin and Greek classics. Among other industries started in the city in the 18th century were bottle-blowing, the weaving of inkle, or linen tape, the making of delft and crystal, and the manufacture of the Highland dye called cudbear.

Next came the demand for ships of iron and steel. Until the end of the 18th century nearly all the iron used in Great Britain was brought from abroad. Dr. Roebuck of Sheffield, however, established the great ironworks at Carron in 1760, and 26 years later Thomas Edington founded the Clyde ironworks at Glasgow. Then in 1801 the rich seams of clayband ironstone in the Clyde valley were discovered by Robert Mushet. Forthwith, Dixon set up the great ironworks S. of the city, and other great firms like the Bairds followed suit. In 1823 James Beaumont Neilson, manager of the Glasgow gasworks, discovered the advantages of the hot blast, and immediately the vast

iron industry of the Clyde valley made another bound forward.

The Forth and Clyde canal was completed in 1790, with a branch to Glasgow. In the previous year another canal, to bring coal from the Monkland pits to the city, having exhausted its capital before completion, was sold by auction for £500 to the firm of William Stirling & Son, who spent £100,000 on it, and made it a great success. A third canal, intended to make Ardrossan the harbour of Glasgow, was begun by the earl of Eglinton in 1807, and built as far as Johnston. In 1758 the first regular stage coach began to run between Edinburgh and Glasgow, making the journey of 42 m. in 12 hours.

Growth of Railways

The first railway to run out of Glasgow was the Glasgow and Garnkirk line in 1831. Its passengers were conveyed in open trucks by an engine weighing seven tons, which ran the distance of 8½ m. in 1 hr. 7 mins. The Glasgow and Ayr Rly. followed in 1840, the Glasgow and Greenock line in 1841, the Edinburgh and Glasgow Rly. in 1842, and the first part of the Caledonian, from Glasgow to Beattock, in 1848. All these lines served as feeders to the city.

As a by-product of these rlys. has grown up the great Glasgow industry of locomotive building. At the present day the North British Locomotive Works at St. Rollox are the largest in the world, while not far short of them are the huge engine-building works of the Caledonian and North British rly. companies.

GOVERNMENT. The management of the affairs of this great city has often been held up as a model to the world. From time to time since the Reformation the boundaries of the city have been extended, till now they lie some 4 or 5 m. distant from the centre in all directions. This area is divided into wards, each of which sends to the governing body three councillors. There are also added a dean of guild, who is the official head of the Merchants' House, and the deacon convener, the head of the incorporated trades.

This town council elects its own lord provost, who holds office for three years, as well as a body of bailies, or magistrates, whose chief duty is to preside in the police courts. The council administers the affairs of the city through committees of its members, and from time to time procures Acts of Parliament to enable it to levy

rates, effect improvement, and carry on municipal enterprises. At the present day the corporation owns property valued at over £23,000,000. It has a debt of more than £16,000,000, and its annual revenue is about £4,000,000. The management of the harbour is undertaken by a separate body, the Clyde Navigation Trust, which has expended nearly £10,000,000, has a debt of about £7,000,000, and a revenue of £706,000. In 1893 Glasgow was made a county by itself, of which the lord provost as lord lieutenant appoints the deputy lieutenants and justices of the peace.

Functions of Corporation

The chief undertakings of the Corporation are the police, of which the first paid body was established in 1800; the fire brigade established as a separate body in 1878; the waterworks inaugurated by Queen Victoria in 1859, by which Glasgow draws its supplies from Loch Katrine and Loch Arklet, the amount being now 110,000,000 gallons per day; the supply of gas for heating, lighting, and power purposes, an enterprise in which it has some £3,250,000 invested; the supply of electricity, on which it has spent at least £1,250,000 since 1892; and the provision of slaughter-houses and of markets for cattle, fish, cheese, vegetables, birds, dogs, and old clothes, which is one of the oldest enterprises of the city.

Still to be mentioned are the cleansing department, with its elaborate system for destruction of refuse or its conversion into manure to be sold to farmers, or used on the city's own farms at Robroyston and elsewhere; the sewage works by which the city's drainage is carried to Dalmarnock, Dalmuir and Shieldhall for purification; and the electric tramway system which runs through every main thoroughfare of the city, and for many miles into the country in all directions. In 1916 the tramway system had paid its own entire cost, and the enterprise made a contribution of some £60,000 a year to the Common Good fund of the corporation. By 1919, however, owing to the great increase in wages, the surplus revenue from the tramways had ceased.

The city also provides baths and washing-houses, and model lodging houses. Its reference library contains nearly a quarter of a million volumes, and controls fourteen district lending libraries in different parts of the city. Its public parks include Glasgow Green, George Square, Kelvingrove Park, Queen's Park, and Rouken Glen, besides the

fine estates of Ardgoil on Loch Long, and of Balloch Castle on Loch Lomond. The former, which is 14,650 acres in extent, was presented to the city by Lord Rowallan in 1905.

Glasgow has unsurpassed facilities for education. The university, removed from High Street to Gilmore Hill in 1870, is one of the best equipped in the country. The technical college, founded by professor John Anderson, was the earliest and is now one of the finest in existence; and the system of primary and secondary schools under the education authority is most efficient. The city's art galleries, of which the collection was begun in 1670, are the richest in the kingdom out of London. Its school of art has turned out many notable artists, and not a few designers of merit, and the Glasgow School (*q.v.*) is of international repute. The city has a large number of theatres and other places of amusement, and among its charitable institutions, besides several vast municipal hospitals, it has three great infirmaries and many other establishments, like the Samaritan Hospital and the Sick Children's Hospital, which are carried on by private beneficence alone.

Glasgow Celebrities

Among the natives of Glasgow who have made name and fame in the realms of literature and art are Zachary Boyd, whose *Last Battle of the Soul* in Death, 1629, is one of the most forcible pieces of Scottish prose writing; Tobias Smollett, whose *Humphrey Clinker*, 1771, commemorates Glasgow notables of its time; Dougal Graham, the Rabelais of Scotland; John Mayne, author of *The Siller Gun*, 1808; James Grahame, author of *The Sabbath*, 1804; Thomas Campbell; Adam Smith; John Wilson, the *Christopher North* of *Blackwood's Magazine*; John Gibson Lockhart; Charles Gibbon and William Black, the novelists; and Alexander Smith the poet, whose description of Glasgow in verse still stands as the finest poetic conception of S. Mungo's city.

In 1920 under the scheme of the British League of Help for the Devastated Areas of France the city of Glasgow adopted the town of Vouziers, in the Aisne district.

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gow . . . from the earliest times to the year 1611, J. D. Marwick, ed. R. Renwick, 1911; *Extracts from the Records of the Burgh of Glasgow*, ed. J. D. Marwick and R. Renwick, 6 vols., 1876-1911 (for the Scottish Burgh Records Society); *The Story of Glasgow*, G. Eyre-Todd, 1911; *Glasgow and Helensburgh: as recalled by Sir Joseph D. Hooker*, David Murray, 1918.

Glasgow University. Scottish University. Founded in 1450 by William Turnbull, bishop of Glas-



Glasgow University arms

gow, it found a home in the High Street. Various Scottish sovereigns made gifts of land and other property to it, and there it remained for about four centuries.

In 1860 a new site was bought on Gilmore Hill, where a magnificent pile of buildings was erected in the Early English style. They include library, museum, classrooms, etc., with houses for members of the staff. Sir G. G. Scott was the architect, and the buildings were opened in 1870, having cost £500,000. Parts of them, Bute Hall and Randolph Hall, were given by the benefactors after whom they are named. Connected with the university is the Royal Observatory on Dowan Hill.

The university has a chancellor and a lord rector, the latter elected by the students voting by nations, of which there are four. Its working head is the principal and it has faculties in art, science, divinity, medicine and law. In the 19th century it received many additional benefactions, and it has many scholarships and bursaries, including the Snell exhibition to Oxford. Women, equally with men, are admitted to its degrees, and for them there is a college, Queen Margaret, founded in 1883. Affiliated to it is the Royal Technical College, which provides courses for those seeking degrees in applied science. The university was at the height of its fame in the 18th century, when Adam Smith, Sir William Hamilton, John Wilson, and other noted Scotsmen were educated here, as were a number of Englishmen. Earlier, in the time of the Civil War, it has been visited by many Englishmen, although then rather for religious reasons.

Glasgow. British light cruiser, one of the Bristol (*q.v.*) class. Completed in 1911, she displaced 4,800 tons; length overall, 453 ft.; carried two 6-in. guns, ten 4-in., and had a speed of 25.8 knots. She escaped from Coronel and took part in the

battle of the Falkland Islands (Dec. 8, 1914), where she helped to destroy the German light cruisers Leipzig and Nürnberg. She destroyed the German light cruiser Dresden at Juan Fernandez, March 14, 1915.

Glasgow, EARL OF. Scottish title borne since 1703 by the family of Boyle. David Boyle, M.P. for Buteshire, was made a peer in 1699 and raised to the rank of an earl in 1703. Patrick James, the 8th earl, inherited the title in 1915. The earl sits in the House of Lords as Baron Fairlie, a title dating from 1897, and his eldest son is known as Viscount Kelburn. The family seat is at Kelburn, Ayrshire.

Glasgow, ELLEN ANDERSON GHOLSON (b. 1874). American

novelist. Born at Richmond, Virginia, April 22, 1874, she published her first novel, *The Descendant*, in 1897. Then came *Phases of an Inferior Planet*, 1898; *The Voice of the People*, 1900; *The Freeman and Other Poems*, 1902; *The Battleground*, 1902; *The Deliverance*, 1904; *The Wheel of Life*, 1906; *Ancient Law*, 1908; *The Romance of a Plain Man*, 1909; *The Miller of Old Church*, 1911; *Life and Gabriella*, 1916.

Glasgow and South-Western Railway. Scottish rly. company. Its main line runs from Glasgow along the west coast and to Gretna. Its total mileage is 1,128, and its headquarters are at St. Enoch Station, Glasgow. The line dates from 1840, and was known as the Glasgow, Paisley, Kilmarnock, and Ayr Rly. In 1850 the Glasgow, Dumfries, and Carlisle Rly. was taken over, and the present title assumed. The company now serves Paisley, Greenock, Ardrossan, Troon and the ports on the W. coast. It owns the harbours at Troon and Ayr. It is now in the group known as the London, Midland and Scottish Rly.

Glasgow Bank Frauds. The failure of the City of Glasgow Bank, Oct. 2, 1878, resulted in losses of over six millions sterling. Every shareholder was responsible to the extent of his fortune. More than half of the whole number had less than £500 of stock, and only eighty-eight stockholders held amounts of £2,000 and upwards. But among this eighty-eight was the bank itself, which held no less than £153,536.

The manager and several directors were tried at Edinburgh,

Feb., 1879, on charges of falsehood, fraud and theft, convicted on certain counts and sentenced to terms of imprisonment varying from eight to eighteen months. See *Trial of the City of Glasgow Bank Directors*, ed. William Wallace, 1905.

Glasgow Herald. The Scottish daily Liberal-Unionist newspaper, started by John Mennons, Jan. 27, 1783, as a weekly, under the title of *The Glasgow Advertiser*. Published later twice a week as *The Glasgow Advertiser and Evening Intelligencer*, the old title was resumed in 1794, altered to *The Herald and Advertiser* in 1802, and finally to *The Glasgow Herald* in 1805. From a tri-weekly it became a daily on Jan. 3, 1859.

Mennons' successors in the editorship have included Dr. James McNayr, Samuel Hunter, George Outram, James Pagan, who instituted modern methods of reporting, William Jack, Dr. J. H. Stoddart, Charles Gilchrist Russell, (1888-1907), Dr. William Wallace, F. Harcourt Kitchin (1909-17). The Herald has always been strong on the commercial side. Allied papers are *The Glasgow Weekly Herald*, 1864, *The Evening Times*,

1876, and *The Bulletin*, 1915. The proprietary firm, George Outram & Co., was converted into a limited liability co. in 1920.

Glasgow School. Name associated since 1886 with a group of painters living in Glasgow. Its members have included D. Y. Cameron, J. E. Christie, Joseph Crawhall, junr., Sir James Guthrie, P.R.S.A., E. A. Hornel, Sir John Lavery, R.A., Harrington Mann, James Paterson, Alexander Roche, R. Macaulay Stevenson, and E. A. Walton, P.R.S.W. See *Painting*: consult also *The Glasgow School of Painting*, D. Martin, 1902.

Glashtin. Mythical horse in Isle of Man folk-lore. It lived in the water, but frequently disported itself on the land with the native ponies. When the Manx ponies became crossed with horses from other countries the glashtin ceased to visit them.

Glasnevin. Parish and village of co. Dublin, Ireland. It is 2 m. from the city of Dublin, and is famous for its cemetery, where many great Irishmen are buried, and for its botanical gardens, opened by the Royal Dublin Society before 1800. There is an agricultural college. Pop. 3,100.

GLASS AND GLASS-MAKING

H. J. Powell, C.B.E., formerly of the Whitefriars Glass Works

In addition to this general article there are articles on special forms of glass, e.g. Irish Glass; Optical Glass; Stained Glass; Venetian Glass. See also Chemistry

The place where glass was first manufactured is not known. Researches have postponed the origin of glass-working in Egypt until about 1550 B.C. The much simpler process of glass-blowing appeared about 100 B.C., and by 100 A.D. all the manual processes of working and decorating glass, as well as processes of moulding and rolling, some elementary and some advanced, had spread throughout the Roman empire.

The history of glass-making deals with a series of waves. The first great Roman wave established centres, and each centre, developing some special line or lines of manufacture, sent out a secondary wave. In the 4th century A.D., starting from Rome, the wave of Mosaic decoration spread by way of Ravenna and Constantinople. To the same century may be attributed the Christian glasses (*fondi d'oro*) found in the Roman catacombs.

It is probable that from Constantinople in the 12th century came the Hedwig cups, rudely and deeply cut with representations of mythical birds and beasts. France in the 11th century from Limoges and Chartres sent out a wave of

Mosaic windows, and in the same century sent makers of glass vessels to Altare, near Genoa; in the 16th century Normandy and Lorraine sent makers of window glass and vessels to England; in the 17th century France developed the manufacture of large sheets of plate glass, and in the 18th century sent mirror-makers and glass-engravers to La Granja in Spain. In the 12th century, under Saracenic influence, Damascus, Aleppo, Cairo, and Alexandria specialised in enamelling on glass vessels, lamps, beakers, and vases, and the wave reached Venice in the 15th century, Germany in the 16th, and Spain and Persia in the 17th.

The glass industry, established in Venice before the 13th century, was banished to Murano in 1291, and attained perfection in the 15th and 16th centuries. The Roman tradition of trailed decoration of Syrian origin was continuous in Spain and Germany. To Holland must be credited the invention in the 16th century of an extremely delicate process of acid-etching.

GLASS-MAKING IN ENGLAND. There is no proof of Roman glass-works of any importance having been established in England. From

early times simple vessels and rough window glass were made in the forests of Surrey and Sussex. In the 14th century some, at any rate, of the glass required for glazing the windows in S. Stephen's Chapel, Westminster, came from Chiddingfold in Surrey. The Venetian adventurers of the 15th and 16th centuries left few traditions. The members of the families of Hennezel and Tyzaek, from Lorraine, who came over in 1576, made England their home and had a lasting influence. They moved from place to place, wherever fuel was available, and their names, often mutilated, are to be found in church registers in Sussex, Surrey, Hampshire, Gloucestershire, in Stourbridge, Newcastle, and London. They introduced improved methods of making window glass, and new forms of drinking glass.

Development of the Industry

The progress of the industry can be traced in a long series of special licences and monopolies. Sir R. Mansell's monopoly lasted from 1618 to 1653, and was contingent on his substitution of coal for wood fuel. In 1696 there were 88 glass-houses; the excise list of 1833 gives 105 in England, 10 in Scotland, and 10 in Ireland. By the middle of the 18th century English flint glass (sand-lead-potash) had been perfected and used for cut table-glass, the process of cutting having been introduced from Bohemia. The brilliancy of this English glass eclipsed the German crystal, and English cut glass spread throughout Europe. The best period was 1780 to 1810. The chief centres were London, Stourbridge, Whittington, and Waterford, in Ireland.

About the middle of the 18th century taper-bowled wine glasses with air twist in stem were introduced. Few, if any, of the Jacobite glasses, commemorating by engraved portraits, emblems, and mottoes the risings of 1715 and 1745, belong to the dates commemorated. The Bristol milk glass of the end of the 18th century, enamelled by Michael Edkins, has considerable merit. The Nailsea rolling-pins and other utensils, streaked or spotted with enamel and colours, were merely by-products of the great crown glassworks (1793 to 1871) and have no real technical or artistic value.

Lighthouse and optical glasses, the coloured glasses made for stained-glass windows from analyses of medieval specimens, and vessels of simple and graceful form due to the influence of William Morris, date from the latter part of the 19th century. To the U.S.A. may be attributed the in-

roduction of pressed table-glass, Tiffany's lustrous vases, and a great variety of automatic machinery which must destroy the handicraft of glass-making.

Glass is a non-crystalline, transparent mixture of fused silicates. The glasses known as "sheet" and "plate" are mixtures of the silicates of soda and lime, the ingredients being sand, carbonate of lime, and sulphate or carbonate of soda. Table or "flint" glass is usually a mixture of the silicates of potash and lead, the ingredients being sand, red-lead, and carbonate of potash.

The temperature at which glass mixtures melt ranges from about 1,200° C. to 1,500° C. When thoroughly melted, glasses become sufficiently liquid to be poured. Most, in cooling, pass from liquidity to a stage of viscosity, resembling the condition of stiff treacle. In this state glass can be coiled or "gathered" round the end of a heated iron rod, as treacle can be coiled round the bowl of a spoon, and if the iron rod be hollow (a blowpipe) the lump can be blown out into a hollow bulb. Viscous glass can be squeezed and extended by an iron roller, moulded by air pressure or by a mechanical plunger, and, owing to its ductility, can be pulled or "drawn" out into an almost invisible filament.

Glass is melted in tank-furnaces or pot-furnaces heated by gas. A glass-melting tank is an oblong bath built of large blocks of fire-clay, and covered with a low arched "crown" of silica bricks. The raw materials are put in at one end, and worked out at the other as molten glass. There are two kinds of pots (crucibles), one like an open basin, the other shaped like an old-fashioned beehive, with a hooded opening near the top.

Pot Furnaces

Pot furnaces are circular, oval, or oblong. They are covered with a low crown supported on arches, within which the pots stand. Until recently the fireclay for making pots was prepared by mixing it with water, and kneading it with the bare feet. The pots were built up of long rolls of clay, carefully consolidated by hand pressure. The clay is now prepared in a pug-mill, and the pots formed in plaster of Paris moulds.

Glass is a bad conductor of heat, and if suddenly cooled is liable to break, owing to internal tension. Glassware must therefore be cooled slowly ("annealed"). Glasses of special composition are now made for gas chimneys and cooking

utensils, to resist extreme changes of temperature; the alteration of the zero-point in thermometers is counteracted by the use of stable zinc-borosilicate glass, and other glasses are made to resist the corrosive action of heat, steam, alkalis, and acids. No glass, however, can withstand hydrofluoric acid, which is used for etching and for polishing glass.

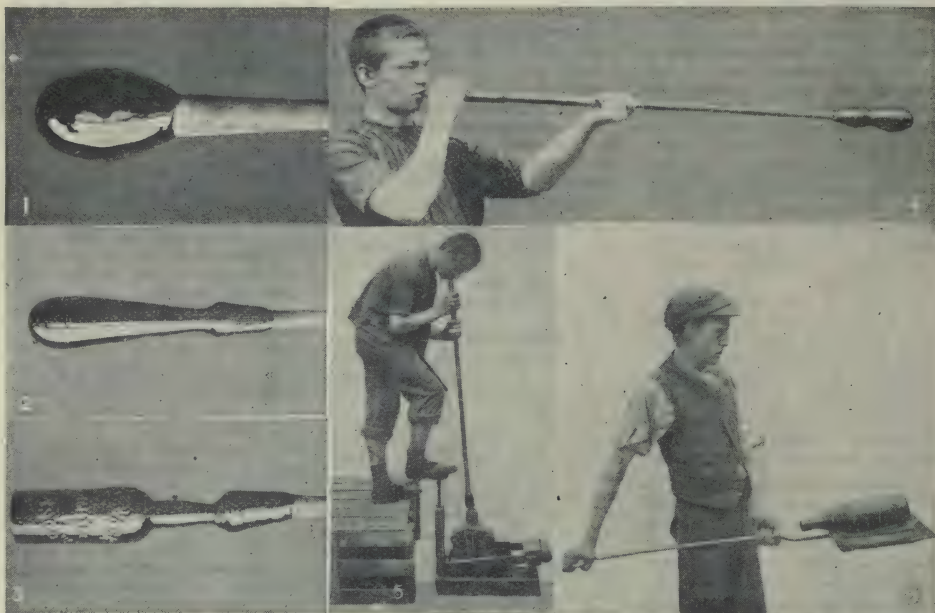
Colour Effects in Glass

Effects of colour in glass are due to ingredients melted with those of the glass, and held in solution or suspension. The colouring ingredient is usually a metallic oxide, e.g. cobalt gives a rich blue; chromium a yellow-green; manganese a violet; nickel purple or brown; ferrous oxide dull green.

MACHINE-MADE GLASS. Much of modern glass is now machine made, and the development of automatic machinery must be credited to the U.S.A. The "Owens" bottle-machine revolves, and has fifteen or more arms successively making bottles. An arm is thrust out, sucks into a mould from a basin of molten glass the exact quantity required to make a bottle, forms the neck by a plunger, and the body in a second mould by compressed air admitted through the neck. It drops the finished bottle into a shoot, which carries it to and through an annealing kiln. Directly one arm has obtained its glass, the succeeding arm commences operations.

The arms of a similar machine used for tumblers and chimneys, turn the glasses horizontally within the moulds to obliterate mould marks. When liberated from the moulds, the tops of tumblers, and both edges of chimneys, have to be cut off and the edges melted. The arms of the Westlake electric-lamp machines, after blowing the initial bulbs, elongate them by swinging before blowing, and turning them in the moulds.

The Colburn or Libby-Owen sheet-glass machine lowers a straight bar or "bait," previously heated into a trough of molten glass, and draws over a roller a continuous sheet. The Frink sheet-glass machine lowers an annular bait into a basin of molten glass, so that it encircles a vertical air pipe in the centre of the basin. The bait when raised draws up a continuous glass cylinder, which, owing to air entering through the pipe, retains its shape. The cylinder is cut into lengths suitable for flattening. In the Libby-Owen tube making machinery molten glass flows over a hollow mandril, revolving horizontally. The glass



Glass. The making of a bottle. 1. Molten glass at end of blow-pipe. 2. As withdrawn from furnace, when—held vertically and placed in mould, 3, the sides of which are brought together by means of a foot-pedal—it is blown into its final shape. The finished bottle, 4, after being cut from blow-pipe, is, 5, carried on a wire shovel to the annealing furnace

Photos. Clarke & Hyde

is drawn away by a "bait," and is kept hollow and cylindrical by air forced through the mandril.

Formerly much glass-blowing was done with comparatively primitive tools, e.g. the blow-pipe, a hollow iron rod, 4 ft. to 6 ft. in length; the pontil, a solid iron rod for holding a vessel by a glass seal attached to its base; a shaping tool, resembling giant sugar tongs, with cutting instead of spoon ends.

Sheet glass is made in the following way: A large and heavy bulb, expanded by compressed air, and lengthened by swinging, is opened at the end distant from the blow-pipe. The cylinder thus formed is detached from the blow-pipe, and, when cold, is split longitudinally, and placed on a flat bed in a kiln, unrolled and spread into a flat sheet. Plate-glass is molten glass poured upon an iron table, and spread and flattened by the passage over it of a heavy roller. Rolled plate is molten glass ladled or caused to flow from a tank, and caused to pass over and under a series of iron rollers.

Many varieties of bottles and table glass are made by air pressure into iron moulds, built up of sections, and hinged together. In the case of light tumblers, wine-glass bowls, and electric-light bulbs, the inside of the mould is painted with an oil and carbon

paste, and the glass is turned inside the mould, whilst it is being blown, to obliterate marks made by the joints of the mould.

CUT GLASS. Decorative cutting, which requires great skill, is effected by pressing glasses, when cold, successively against the sharpened edges of wheels of iron, stone, and wood, revolving on horizontal spindles, and fed respectively with sand and water, and pumice, mixed with putty powder and water.

The foundation of the glass technology society in 1917, and the inauguration of a national glass research association are intended to put glass-making upon a proper scientific basis. Another influence was the opening, in 1915, in Sheffield University, of a department of glass technology, under Professor W. E. S. Turner. See Sheffield.

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Glassites. Scottish sect, founded by John Glas. He taught that all Church establishments were unscriptural, and that each congregation should be self-governing and have the power to appoint

its own ministers. The publication of his views in *The Testimony of the King of Martyrs*, 1727, led to his suspension by the synod of Angus, and in 1730 he was deposed from the ministry. He founded several congregations, better known as Sandemanians, after one of the more conspicuous elders, Robert Sandeman, son-in-law of Glas. The sect adopted the practices of community of goods and abstinence from certain kinds of food.

Glass Paper. Sheets of thick cartridge paper upon the surface of which powdered glass is fixed. Glass is broken in an iron mortar, ground to powder, and graded according to the coarseness of the particles by passing through sieves. The paper is prepared by coating evenly with liquid glue, and, before the glue sets, sifting the powdered glass over the surface, shaking off the superfluous powder. Glass paper is used for smoothing the surface of wood.

Glass-sand. Minute fragments of siliceous minerals, loosely held together. Their commonest constituent is quartz (*q.v.*), which with felspar makes up about nine-tenths of the bulk. The brilliancy, lustre, transparency, and hardness of glass depend upon the nature of the sand used. High-class glass-sand needs a silica-percentage

of nearly 100, and its grains should be angular and of medium to fine grade. The presence of iron spoils sands for best uses.

Sands with heavy minerals and other impurities are used only for rough bottle-glass. The purest glass-sand comes from Fontainebleau and Lippe, being composed of water-clear quartz with less than 0.02 p.c. of heavy minerals and free from coating of impurities. British localities for good sands include the Lower Greensand beds of Aylesbury, King's Lynn, Leighton Buzzard, and the Weald. See Glass.

Glass Sellers' Company.

London city livery company. Incorporated in 1664, it has one trust, the John Abbott scholarship of £50 tenable by a scholar of the City of London School at Oxford or Cambridge. The offices are 13, Queen Anne's Gate, London, S.W.

Glass Snake (*Ophisaurus ventralis*). Popular but erroneous name for the Scheltopusik, a genus of lizards found in Hungary, Greece,



Glass Snake, a legless lizard, over a yard in length

Russia, Southern Asia, and N. America. It is snake-like in form, the limbs being either absent or rudimentary, and the body is covered with scales. It is perfectly harmless, and feeds on mice and snails. See Lizard.

Glasswort (*Salicornia europaea*) OR MARSH SAMPHIRE. Annual leafless herb of the natural order Chenopodiaceae. A native of Europe, N. Africa, W. Asia, and N. America, it has juicy, jointed stems and branches, joints spindle-shaped. The minute flowers are in pairs, sunk in a pit in the joints of the branches, and have no petals. Glasswort grows in salt marshes, and was so called from having been burnt formerly to obtain soda from its ashes (*Barilla*) for use in glass-making. Its joints are pickled as a substitute for real samphire (*Crithmum*). See Chenopodiaceae.

Glastonbury. Borough and market town of Somerset. It stands on the Brue, 5½ m. from Wells and



Glasswort or Marsh Samphire. A leafless herb with fleshy branches

37 m. S.W. of Bath, and has a station on the Somerset and Dorset Rly. It is chiefly famous for its abbey ruins, remains of a great monastic house, belonging to the Benedictines, which flourished here until the Reformation. The most complete of the ruins is that of S. Joseph's Chapel, really the Lady Chapel, and they show that the abbey church must have been one of the largest and noblest in England. Near it is the abbot's kitchen, an octagonal building, and some distance away is the abbot's barn. In the town is the abbot's justice room. The abbey buildings covered 40 acres, and the abbey was one of the richest in England.

The chief buildings of the town are the Perpendicular church of S. John the Baptist, that of S. Benedict, and S. John's Hospital, a 13th century foundation. The George Inn was once a house for pilgrims. There is an antiquarian museum.

At the beginning of the 7th century the Benedictines founded a monastery here which was replaced by one which Dunstan, who was abbot here, restored and enlarged in the tenth century. This was destroyed by fire in 1184, when another and finer one was erected, which lasted until the dissolution of the monasteries. Until 1907 the ruins were in private hands, after which they were transferred to the diocese of Bath and Wells. Tradition ascribed the foundation to Joseph of Arimathea, who, it is said, built a church here and planted the thorn which bloomed once a year on Christmas Day. It was long a place of pilgrimage. The town,

which grew up around the abbey, was given municipal privileges in 1706. Market day, Monday (alternate). Pop. 4,250. (See Abbey; Clock; consult also Architectural Handbook of Glastonbury Abbey, F. B. Bond, 1919.)

The Glastonbury lake-villages are two late Celtic settlements of the crannog (*q.v.*) type near Glastonbury. Discovered by Arthur Bulleid in 1892, the principal one was formed upon the fringes of a morass by pile-surrounded brushwood fascines. Beneath peat mounds 90 wattle-and-daub round huts, 18 ft. to 35 ft. across, were traced within 3½ acres. The stratified floors, successively remade and rehearsed as the foundations subsided, indicate 150 years of village life before the Roman occupation. The rarity of weapons—7 out of 109 iron objects—betokens a peaceful settlement, with several local industries. Another settlement discovered in 1908 at Meare village, 2 m. away, contained similar remains.

Glatz. Town of Germany. In Silesia, it is 58 m. by rly. S.S.W. of Breslau. It is on the Neisse, lying between the Eulen Gebirge and the Bohemian frontier. Above it rises the lofty keep of the old castle, while across the river is the fort known as the Schäferberg. Notable buildings are the parish church and the town hall. Pop. 17,121.

Glauber, JOHN RUDOLPH (1604–68). German alchemist. Born at Karlstadt, afterwards living at Strasbourg, Basel, Frankfurt-on-



Glatz, Germany. The citadel overlooking the town

Main, and Cologne, he died in poverty in Amsterdam. His name is perpetuated in Glauber's salts, which he discovered and lauded as a universal medicine. See Alchemy.

Glauber's Salt. Sodium sulphate, $\text{Na}_2\text{SO}_4 \cdot 10\text{H}_2\text{O}$, colourless crystals soluble in water. The dose is 30 to 120 grains for repeated administration; ¼ to ½ oz. for single administration. It is a useful purgative for the treatment of habitual constipation.

Glauchau. Town of Germany, in Saxony. Situated on the right bank of the Mulde, 8 m. N.N.E. of Zwickau, and due W. of Chemnitz, it is a busy manufacturing centre. Pop. 25,155.

Glaucia, GAIUS SERVILIUS. Demagogue of ancient Rome. He was closely associated with Saturninus, another demagogue, in agrarian and other popular proposals brought forward in 100 B.C. He and Saturninus were supporters of Marius, who, after he had made use of them, abandoned them to their fate, and both were killed by a band of nobles. *See* Saturninus.

Glaucoma (Gr. *glaukos*, bluish green). Disease of the eye characterised by an increase of tension or pressure of the fluids within the eyeball. In chronic glaucoma, gradually increasing dimness of vision is usually the first symptom, and in some cases rainbow colours are seen round the margins or lights. In acute glaucoma, pain in the eyeball, often radiating over one side of the head, is a marked symptom, and vision is affected.

Hardness of the eyeball is an important diagnostic sign. Glaucoma is very serious, and if not promptly treated may lead rapidly to permanent blindness. The general principle of treatment is to remove a portion of the iris so as to allow some of the compressed fluid to filter into the anterior chamber of the eye. *See* Blindness; Eye.

Glaucinite (Gr. *glaukos*, bluish green). Mineral consisting of hydrated silicate of iron and potash, with some alumina. Green in colour and indefinite in shape, it is a common constituent of green-sands, in which it occurs as small grains. *See* Foraminifera.

Glaucophane (Gr. *glaukos*, and *phainesthai*, to appear). A silicate of sodium, aluminium, iron, and magnesium, a blue variety of the amphibole group of minerals. It is an important constituent of great metamorphosed rock-masses (schists) in the valleys of the Southern Alps and Anglesey. In colour these schists are slate-blue grey, with silky lustre formed by the structure of the mineral.

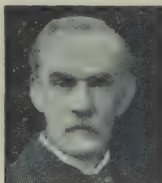
Glaucus. Name of three personages in Greek mythology. They are the builder of the Argo, the ship of the Argonauts (*q.v.*), ultimately a sea-god; the father of Bellephophon; and a Lycian hero slain by Ajax.

Glaucus. Genus of gastropod molluscs, found floating on the surface of the Atlantic and Pacific oceans. They resemble green slugs with six heavily fringed lobes on the body. *See* Gasteropoda.

Glaze. Layer of pure or mixed transparent colour thinly applied to a painting to improve its tone, to impart mellowness, to protect the surface, and to facilitate its being cleaned without risk of injury. The glaze should convey the effect of a varnish on the picture it covers, and will be all the more durable if applied as soon as the colour beneath is dry enough not to be affected by the brush marks. In this respect it differs from a varnish, which should not be applied until the painting is absolutely dry.

Glaze also plays an important part in the manufacture of pottery and porcelain. At the stage known as the biscuit state, the ware is dipped in glaze, which either gives it a finished appearance, or, in decorated porcelain, forms the ground on which the painting is applied. *See* Tiles.

Glazebrook, SIR RICHARD TETLEY (b. 1854). British physicist. Born at Liverpool, Sept. 15, 1854, he was educated at Liverpool College and Trinity College, Cambridge, where he was 5th wrangler and fellow of his college. For some time he lectured in the university, and, devoting himself to physics, became in 1880 demonstrator, and in 1890 assistant director, of the Cavendish Laboratory. In 1898 he was chosen principal of University College, Liverpool, but in 1899 he removed to London as director of the National Physical Laboratory, resigning in 1919. His work lay chiefly with optics and electricity, and in connexion with the latter he was president of the Institute of Electrical Engineers in 1906. He wrote text-books on physical optics, heat and electricity. He was knighted in 1917.



Sir R. Glazebrook,
British physicist
Russell



Glaziers' Company arms

Glazing. Act of fitting glass. Common glazing consists in fixing panes of glass in grooved frames, or sashes, by means of putty. Occasionally, when the sheet of glass is large, small headless nails or sprigs are driven into the frame at wide intervals, and it is sometimes desir-

able to support the glass with a supplementary framework of fillets of wood (beads). A bed of putty ("back putty") is laid in the groove to receive the glass, on the margins of which the "front putty" is lightly and evenly pressed with a spatula ("putty knife") and painted to prevent the putty perishing from evaporation of the oil. "Cathedral" or leaded lights comprise strips of lead ("comes") of Γ section, strengthened where necessary with vertical or horizontal steel saddle-bars, the comes being soldered together at joints.

Glass should not be placed in direct contact with the metal, but should be bedded on strips of wash-leather glued to the comes, the beads being secured with screws. When panes of glass are laid slate-wise on roofs, one pane slightly overlapping another, the panes are held by copper clips, or tingles.

To reduce fire hazard, metal framing is fitted with wired glass, a wire mesh embedded in the glass offering effectual resistance to flame and heat. It merely cracks where ordinary glass would fly out and admit flames through. Putty-less or dry glazing systems are generally adopted for large expanses of glass roofing—e.g. Victoria railway station, London. *See* Building; Glass; Pottery; Tiles.

Gleaning OR LEASING. Gathering what is left after harvest, usually corn, but sometimes grapes or other produce. By the Mosaic law the farmer was expressly commanded to leave the gleanings of his fields and vineyards for the poor and the stranger, and was forbidden even to "wholly reap the corners" of the fields, and from the remotest times the poor have been almost universally allowed to glean.

In England the public are not legally entitled to glean, but are seldom turned off, although in some districts gleaning is done by the farmer's and harvesters' families.

Glebe (Lat. *gleba*, clod, land). Term in ecclesiastical law for land belonging to a benefice. It was formerly held to be essential that each parish should possess a house and glebe land for the support of the parson. The glebe might be farmed by the parson, or, subject to certain restrictions, let on lease in consideration of an annual rental, or in certain circumstances sold or exchanged. Recent legislation has enabled parishes to get rid of what was often a source of loss rather than of income. *See* Tithe.

Glee. English vocal concerted work in three or more parts. It is for solo voices, unaccompanied and usually male, the style being non-contrapuntal. The word is derived

from the Anglo-Saxon "gligg," music, and has little connexion with gleeful. Standard glee writers are Webbe, Battishill, Calcott, Cooke, Attnaby, Horsley, Mornington, Danby, Stevens, Spofforth, Storace, Savile, Este, Paxton, Arnold, Mazzinghi, Shield, and Ford.

Gleichen, ALBERT EDWARD WILFRED, LORD (b. 1863). British soldier. Born Jan. 15, 1863, the eldest



Edward,
Lord Gleichen,
British soldier

Russell

son of Admiral Prince Victor of Hohenlohe-Langenburg, he joined the Grenadier Guards in 1881 and served in the Nile expedition, 1884-85. From 1886-88 he was at the War Office. He accompanied Sir West Ridgeway's mission to Morocco, 1893, and a mission to Abyssinia, 1897. He served in S. Africa 1899-1900, where he gained the D.S.O.; was director of intelligence and Sudan agent, 1901-3; and employed at the War Office, 1907-11. During the Great War he commanded the 37th division, 1915-16, and organized and directed the intelligence bureau, dept. of information, 1917-18. He was created K.C.V.O. 1909, and promoted major-general 1915.

Formerly known as Count Gleichen, he relinquished his German honours in March, 1918, when he was granted the style, title, and precedence of the younger son of a marquess. Lord Gleichen has written *With the Camel Corps up the Nile*, 1888; *With the Mission to Menelik*, 1897; *The Doings of the 15th Brigade*, 1917. His sisters, Lady Feodora (1862-1922) and Lady Helena Gleichen, were sculptor and painter respectively.

Gleichenia. Genus of ferns of the natural order Polypodiaceae. Natives of the tropics, they have creeping rhizomes, and the leafy portion of the frond is forked, the two divisions being then subdivided after the manner of a feather.

Gleiwitz. Town of Germany, in the plebsite area of Upper Silesia. It stands on the river Klodnitz, 16 m. E.S.E. of Beuthen, and is an old place with a fine Roman Catholic church. In the industrial district of Silesia, and near the mines, it is an important banking centre, and has iron and boiler works, and manufactures wire, nails, machinery, etc. Pop. 66,981.

Glen. Narrow valley through which a river flows, or one between two hills. The word is of Celtic origin; hence the frequency of the

word in place-names in Scotland and Ireland. The Gaelic form is *gleann*, valley.

Glenalmond. Glen or valley of the Almond river, Perthshire, Scotland. It is about 20 m. long, and the most beautiful portion of it is called Sma' Glen. On the right bank of the Almond stands Trinity College, the first school in Scotland modelled after the English public schools. The school has accommodation for about 160 boys. The buildings include a chapel, laboratories, engineering shops, gymnasium, library, etc. The school has various scholarships. Methven, 4½ m. N.W., is the station, and Perth is 10 m. E. Dr. Charles Wordsworth was the first warden. In the glen is the reputed grave of Ossian.



Glenalmond. Arms of Trinity College English public schools. The school has accommodation for about 160 boys. The buildings include a chapel, laboratories, engineering shops, gymnasium, library, etc. The school has various scholarships. Methven, 4½ m. N.W., is the station, and Perth is 10 m. E. Dr. Charles Wordsworth was the first warden. In the glen is the reputed grave of Ossian.

Glenart Castle. British hospital ship. Belonging to the Union-Castle line and of 6,000 tons, she was mined in the approaches to Spithead at 11.40 p.m., March 1, 1917, and had on board 525 sick and wounded, 118 crew, and about 70 medical staff, all of whom were saved. On Feb. 26, 1918, at 4.5 a.m., on a voyage from Newport, Mon., to Brest, she was torpedoed



Gleichenia. Feather-shaped fronds of *Gleichenia acutifolia*

and sunk by a German submarine in lat. 51° 5' N., long. 5° 10' W. She had no patients on board, but of her complement of crew and medical staff about 153 lives were lost.

Glencairn, EARL OF. Scottish title borne by the family of Cunningham from 1488 to 1796. The

first earl was Alexander Cunningham, a lord of parliament, killed when fighting for James III against some rebels in 1488. His descendant, William, the 4th earl, took part in the affairs of both England and Scotland in the reign of Henry VIII, and his son Alexander, the 5th earl (d. 1574), was concerned in the troubles of Scotland under Mary Stuart; at times he was with the reformers and at others with the queen. William, the 9th earl (d. 1664), was, perhaps, the most prominent of all, for he was responsible for the rising in Scotland in favour of Charles II which is named after him. He led this in 1653, but it soon collapsed and he was im-



Glencoe. The rugged Argylshire glen in which the Macdonalds were massacred in 1692

prisoned; later he became lord chancellor of Scotland. The 14th earl, James, who died childless in 1791, is known as the friend of Burns, who wrote a Lament on his death (beginning *The wind blew hollow frae the hills*). His brother, the 15th earl, died childless in 1796, and the title became extinct.

Glencoe. Glen in Argylshire, Scotland. It extends for 10 m. W. from Buchaille Etive to Loch Leven, an E. arm of Loch Linnhe. It lies among magnificent mountain scenery with peaks rising to 3,800 ft.

The place is noted for the massacre which took place here in 1692. After the suppression of Dundee's Jacobite insurrection of 1689, many Scottish clans remained disaffected, and the Scottish government, chiefly controlled by Lord Stair, his son, and Lord Melville, proclaimed an amnesty to all who should take an oath of allegiance by Dec. 31, 1691. The chief of the Macdonalds of Glencoe, near Loch Leven, put off doing so till the last moment and, there being no magistrate at Fort William when he went to take the oath, was compelled to proceed to Inveraray, with the result that the oath was not taken till Jan. 6. His old enemy, the Master of Stair (Lord Stair's son), took advantage of this, and an order was obtained from William

III for the extirpation of the Macdonalds as being dangerous irreconcilables.

The order was carried out by the Campbells, also the inveterate enemies of the Macdonalds, who, arriving in the glen on Feb. 13, 1692, as friends, were given hospitality by the unsuspecting inhabitants. In the night they rose and treacherously murdered their hosts, while many Macdonalds who escaped actual massacre perished in the mountains. In extenuation of William's part in the tragedy it is said that he signed the order without reading it. See Paradoxes and Puzzles, J. Paget, 1874; The Massacre of Glencoe, G. Gilfillan, 1912.

Glencoe. Village of Natal, S. Africa. It is 231 m. N. of Durban by rly., on the main line to Johannesburg and branch line to Vryheid and Ermelo. Its altitude is 4,303 ft. Near here the opening operations of the South African War took place in the autumn of 1899.

Glenconner, EDWARD PRIAULX TENNANT, 1ST BARON (1859-1920). British politician.



Edward Tennant,
1st Baron Glenconner
Russell

Born May 31, 1859, the eldest surviving son of Sir Charles Tennant, Bart., he was educated at Eton and Trinity College, Cambridge. He travelled in Africa, Asia, and America, and gained some political experience as assistant private secretary to Sir George Trevelyan. In 1906 he was returned as Liberal M.P. for Salisbury, but lost his seat in 1910. He succeeded to his father's baronetcy in 1906, and in 1911 was made a peer. He died Nov. 21, 1920.

Lord Glenconner was chairman of the Glasgow firm of Charles Tennant, Sons & Co., and the Union Bank of Scotland. In 1895 he married Pamela, daughter of the Hon. Percy Wyndham. Their eldest son, Edward Wyndham Tennant, was killed in action in 1916. His Worples Flit and other poems were published after his death.

Lady Glenconner wrote Windlestraw (in verse), 1905; a Memoir of her son, 1919.

Glencorse. Parish of Midlothian, Scotland. It stands on Glencorse burn, 14 m. from Edinburgh, and has a station on the N.E. Rly. There are barracks and a reservoir from which Edinburgh draws part of its water supply. Pop. 1,400.

Glencorse Wood. Wood of Belgium, in the prov. of W. Flanders. It is 4½ m. E. of Ypres, a little to the N. of the Ypres-Menin road. It was the scene of severe fighting in the third battle of Ypres, 1917. On Aug. 10 this strongly fortified region was attacked by Lancashire troops, Bedfordshire, and West Surreys, who inflicted heavy losses on the Germans. It was captured by the British, Sept. 20, 1917. See Ypres, Third Battle of.

Glendalough. Valley of Ireland, in co. Wicklow. It is 8 m. N.W. of Rathrum, a station on the Dublin & S.E. Rly., and is famous for its beauty and its eccles. ruins. The glen, 2 m. long, is enclosed by mts. which in places reach over 2,000 ft. It is traversed by the Gleealeo, which in it forms two lakes. Glendalough was the seat of a bishop from the 6th century to the 13th, after which, having been plundered, the city, which some think was of considerable size, fell into decay. The ruins are known as the Seven Churches, these being the cathedral, Our Lady's Church, S. Kevin's Kitchen, the ivy church, the priory, and two others. S. Kevin's Kitchen is the most complete. Most of them were founded by S. Kevin. There is also a fine round tower and a cross, while here was a monastery.

Glendower, OWEN (c. 1359-1416). Welsh rebel, who claimed descent from the old Welsh princes. He studied law at Westminster, fought for Richard II against the Scots in 1385, and entered the service of Henry of Lancaster. After Henry IV's accession he became the champion of Welsh independence, assuming the title of prince of Wales and summoning a Welsh parliament, and spent the rest of his life in resistance against English domination.

He made an offensive alliance with France against England, but suffered serious reverses. The date and manner of his death are uncertain. He figures in Shakespeare's Henry IV. See Owen Glyndwr and the Last Struggle for Welsh Independence, A. G. Bradley, 1901.

Glenglynn. River of Victoria, Australia. It drains the S.W. corner of that State from the Grampians and debouches at the head of Discovery Bay at Nelson, near the



Glendalough, Ireland. The glen and old city, with the ancient Round Tower

South Australian border. Its length is 260 m.; it is unnavigable and in dry seasons its bed is bare through evaporation.

Glenelg. Seaport and watering-place of South Australia. It stands on Holdfast Bay, 6 m. by rly. S.W. of Adelaide, with whose inhabitants it is a favourite resort. Pop. 4,849

Glenelg, CHARLES GRANT, BARON (1778-1866). British statesman.

Born at Kidderpore, Bengal, Oct. 26, 1778, and educated at Magdalene College, Cambridge, he was called to the bar, and entered Parliament in 1811 as member for the Inverness and Fortrose burghs. Made



Charles Grant,
1st Baron Glenelg
After J. Slater

a lord of the treasury in 1813, a privy councillor and Irish secretary in 1819, he became vice-president in 1823, and president of the board of trade in 1827, and of the board of control in 1830. In 1835 he was raised to the peerage and made colonial secretary, but was forced to resign in 1839 on account of his vacillating Canadian policy. He died at Cannes, April 23, 1866. His title was taken from his estate in Scotland.

Glenesk, ALGERNON BORTHWICK, BARON (1830-1908). British journalist.

Born at Cambridge, Dec. 27, 1830, eldest son of Peter Borthwick, M.P., editor of The Morning Post, he was Paris correspondent of that paper in 1850, and succeeded to the editorship in 1852,

and to the proprietorship in 1876. He suggested the formation of the Primrose League, 1883, and



Algernon Borthwick,
1st Baron Glenesk
Haines

was Conservative M.P. for S. Kensington, 1885-95. Knighted, 1880, he was created a baronet in 1887, and raised to the peerage as Baron Glenesk, 1895, when he handed over the control of *The Morning Post* to his son Oliver (d. 1905). By his death, Nov. 24, 1908, the title became extinct. See Lord Glenesk and *The Morning Post*, R. J. Lucas, 1910.

Glenfinnan. Glen and hamlet of Inverness-shire, Scotland. The hamlet stands at the head of Loch Shiel, 18 m. W. of Fort William. A monument, erected in 1815, marks the spot where Prince Charles Edward unfurled his banner in 1745.

Glengarriff. Village and pleasure resort of co. Cork, Ireland. It



Glengarry bonnet

stands on Glengarriff Harbour, an arm of Bantry Bay, 7 m. N.W. of Bantry, and is a noted beauty spot.

Glengarry. Glen of Inverness-shire, Scotland. It is formed by the Garry, and lies between lochs Quoich, or



Glengarry, Inverness-shire. View of the glen at the mouth of the river

Oich, and Garry. It was the home of the Macdonalds, and gives its name to the Highland bonnet, which is worn by the kilted and some other Scottish regiments.

Glen Innes. Chief town in the rich New England plateau of New South Wales. It is 423 m. N. of Sydney by rly., on the main line to Queensland. It is the chief tin-mining centre of the state, and bismuth, wolfram, and molybdenite are also found. Pop. 4,089.

Glenlivet or **GLENLIVAT.** Valley of Banffshire, Scotland. It is the glen of the little river Livet, a tributary of the Avon, and is chiefly celebrated for its whisky. It is also the name of a parish, 6 m. S.E. of Ballindalloch.

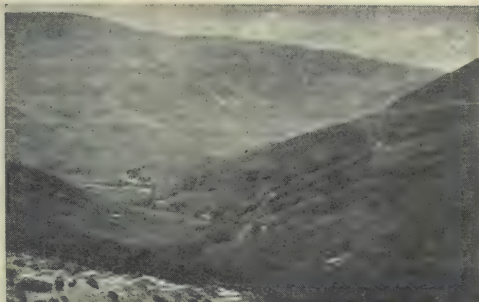
Glenmore. Valley of Inverness-shire, Scotland. About 60 m. long, it extends from the Moray Firth to

the head of Loch Linnhe, i.e. right across the country. It is thus called also the Great Glen of Scotland. In it are the Caledonian Canal and lochs Ness, Lochy, Oich, and others. There are other glens of this name in Scotland, one being in Perthshire.

Glenroy. Valley of Inverness-shire, Scotland. About 14 m. long, it is remarkable for its three parallel roads which extend in terraces on both sides of the glen. They are generally thought to be the margins of lakes formed during the glacial period by the melting of the ice which filled the tributary valleys. The river Roy flows through the glen, in which are several villages.

Glens Falls. City of New York, U.S.A., in Warren co. On the left bank of the Hudson, where it unites with the Champlain Canal, it is 55 m. N. of Troy, and is served by the Delaware and Hudson Rly. It contains a free public library, two academies, and two hospitals. In the neighbourhood are limestone and marble quarries, and lime and cement works, and the city has paper, wood-pulp, and shirt and collar manufactures.

It is named after falls on the Hudson river. Settled in 1763,



Glenroy, looking across the glen to the three parallel roads or terraces

Glens Falls was incorporated as a village in 1837, and became a city in 1908. In 1864 and again in 1884 it suffered greatly from fires. Pop. 17,160.

Glenshee. Valley of Perthshire, Scotland. It is the valley of the Shee Water, which joins the Ardlie at Bridge of Cally; through it passes the main road from Blairgowrie over the Cairnwell to Braemar. Length 13 m.

Glenshiel. Valley and parish of Ross and Cromarty, Scotland. Its length is 26 m., and its average breadth is 4 m. It was formerly part of the Seaforth country, and in 1719, during the small Jacobite rising, there was a fight in the pass between the Seaforths and the English. Glenshiel is also the name of a parish, which includes Letterfearn. Pop. 339.

Glentilt. Valley of Perthshire. It runs for about 15 m. S.W. from the border of Aberdeenshire to Blair Athol. The Tilt runs through it, hence its name. On the left are some peaks of the Grampians, over 3,500 ft. high.

Glider. Name for any heavier-than-air vessel without a motor, which is so designed that when launched from a height, or with certain velocity, it pursues a path of gentle descent through the air. In a calm the glider derives

its power from gravity; that is, it falls until it attains a certain speed, and then, as in the case of an aeroplane, the air provides sufficient support to allow the glider to descend in a long slope. In a strong wind having an upward course, a glider can soar, the force of the wind in this case neutralising



Glenlivet, Inverness-shire. General Wade's Bridge over the river Livet

gravity. By their experiments with gliders, Lilienthal, Chanute, the Wrights, and other pioneers opened up the way to the powered-driven aeroplane. See *Aeronautics*: Lilienthal; Wright, O. & W.

Gliding. Action of an aeroplane in the air when descending with the engine stopped. An aeroplane travels and maintains its horizontal course in the air by virtue of the thrust of the propeller. When the engine is stopped the machine becomes a glider, and it follows a sloping path towards the earth. In the widest sense of the term any object may be said to glide through the air when it descends not vertically, but along a sloping path. The angle this path makes with the horizon is called the gliding angle of the machine, and is determined theoretically by the ratio of the lift to the drag or resistance.

Globe (Lat. *globus*). Spherical body, the whole of the surface of which is equidistant from the centre. The word is used in the singular to signify the earth. A sphere on the surface of which is drawn a map or representation of the earth or heavens, is termed a terrestrial or celestial globe respectively. See *Earth*.

Globe, THE. London evening newspaper. It was first published Jan. 1, 1803, as *The Globe or Literary Advertiser*, largely as a booksellers' organ. In turn *The True Briton*, *The Nation*, *The Evening Statesman*, *The Argus*, and *The Evening Chronicle* were amalgamated with it, and on Dec. 30, 1822, a commercial travellers' organ, *The Traveller*, was absorbed and the double title, *The Globe and Traveller*, thereafter adopted. Long an official organ of the Whigs, *The Globe* was acquired by the Tories in 1866.

Sir George Armstrong (1836-1907) edited it from 1871, and was proprietor from 1875 until his death. From 1908-11 it was owned by Hildebrand Harmsworth, a brother of Viscount Northcliffe. It was absorbed in the *Pall Mall Gazette* in Feb., 1921, and with the latter in *The Evening Standard*, 1923.

Globe Amaranth (*Gomphrena globosa*). Annual herb of the natural order *Amarantaceae*. A native of India, it has downy, opposite, oblong leaves. The flower-heads are globular, about 1 in. across and dark red.

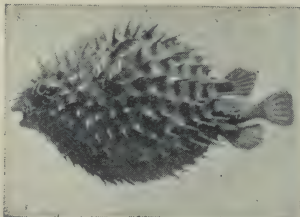
Globe Artichoke. Perennial plant supposed to be a cultivated variety of the cardoon (*q.v.*).

Globe Case, THE. Temporary suppression of the London evening newspaper, *The Globe*, during the

Great War. In Nov., 1915, *The Globe* published a statement that it was the intention of the government not to allow Lord Kitchener, who had started that week for a tour of inspection on Gallipoli, to return to his position as Secretary of State for War in Whitehall. Alleging that this quite unauthorised statement was calculated to cause dismay among the Allies, the government enforced disciplinary measures against the journal under regulations 50 and 51A of the Defence of the Realm Act.

On Nov. 6 agents from Scotland Yard blockaded the premises, seized the issue, searched the offices, and put the machinery out of action by removing essential parts. Within a fortnight *The Globe*, under a new editor, was allowed to resume publication.

Globe Fish. Marine fish of the *Diodontidae* and *Tetrodontidae* families. They are found in the



Globe Fish. The lesser spotted variety with distended body

tropic seas, and have the power of distending their bodies with air till they assume a more or less globular appearance. At other times they have the usual shape of a round-bodied fish. The largest species are about 2 ft. in length, and most are beautifully coloured.

Globe-flower (*Trollius europaeus*). Perennial herb of the natural order *Ranunculaceae*. It is a native of Europe. The leaves are round in general outline, but divided into five toothed lobes. The fine yellow flowers are globular, and



Globe-flower. Leaves and flowers of this European herb

their rich appearance is due to the numerous sepals, which are petal-like, while the true petals are small and narrow.

Globe Tavern. Model refreshment house. Erected in 1917 by the Central Control Board at Longtown, near Carlisle, it took the place of an old hotel of the same name. The tavern, an entirely new structure, was one of several experiments in state ownership of the liquor traffic in the Carlisle area during the Great War. See *Carlisle*; *Central Control Board*; *Gretna*.

Globe Theatre, THE. Famous London playhouse, built on the Bankside, Southwark, in 1599, by



Globe Theatre, the old London playhouse associated with Shakespeare

From an engraving c. 1612

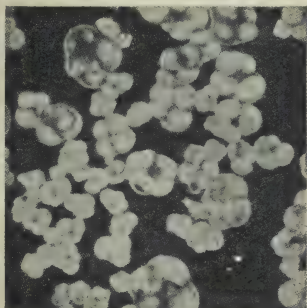
the Burbages, Shakespeare, and four other actors. A circular building, the "wooden O" of the play *King Henry the Fifth*, it held 1,200 spectators, and was partly open to the sky. Shakespeare acted and had shares in this theatre. It was destroyed by fire, June 29, 1613; and its successor, opened June 30, 1614, lasted until April 15, 1644. It has been conclusively shown that the playhouse of Shakespeare's time was on the S. side of Park Street, Southwark, and the position of the frontage has been located to within a foot. (See *The Site of The Globe Theatre*, G. Hubbard, 1909; *The Site of The Globe Playhouse*, L.C.C., 1921.)

The third London theatre of this name was opened in Newcastle Street, Strand, Nov. 28, 1868, and had a chequered existence until its disappearance with much adjoining property in 1902. Here Jennie Lee first appeared in J. P. Burnett's *Jo*, Feb. 21, 1876; Tennyson's *The Promise of May* failed, 1882; Penley brought Charley's Aunt

from The Royalty, Jan. 30, 1893; and Pinero's *The Gay Lord Quex* was produced by John Hare, April 8, 1899. Hicks's Theatre, opened in Shaftesbury Avenue, W.C., on Dec. 27, 1906, was renamed The Globe, July, 1909. See Bankside.

Globe-thistle (*Echinops*). Genus of biennial and perennial herbs. Of the natural order Compositae, they are natives of Europe and W. Asia. Their long, strongly lobed and spiny leaves give them a resemblance to thistles. The flower-heads are gathered into large globular masses, each standing on a long stalk. The flowers are white or blue. The best known species is the S. European *E. ritro*.

Globigerina. Genus of Foraminifera. They are minute protozoa, mainly marine, which secrete



Globigerina. Minute foraminiferous protozoa in globigerina ooze

shells. In the perforate group these shells are hard and glossy and are pierced by a vast number of little holes, through which the body protoplasm flows out in thread-like streams, called pseudopodia, for the purposes of locomotion and for seizing food. Globigerina abound in the sea, where their shells falling to the bottom form the globigerina ooze which constitutes such a considerable part of the bed of the ocean. See Foraminifera.

Globularia. Small genus of perennial herbs and shrubs, of the natural order Selaginaceae. Natives of



Globularia alypum, a greenhouse species of the herb



Globe-thistle. Leaves and flower-heads of the Echinops

the Mediterranean region, they have leathery, lance-shaped leaves, and numerous small flowers gathered into flattish heads. *G. vulgaris* and *G. nudicaulis*, with blue flowers, are frequently grown in gardens, and *G. alypum*, a shrubby species, in the greenhouse. They are sometimes known as Ball-flowers.

Globulins. Class of protein substances which occur both in the plant and animal kingdoms. As a rule insoluble in water, they dissolve in dilute neutral salt solutions. Globulins in solution are precipitated by adding a large excess of water; on heating they coagulate. It is not possible, however, to draw a sharp line of distinction between albumins and globulins, but the solubility of globulin in 10 p.c. salt solution is an arbitrary distinction which has been adopted.

Glochidium. Name given to the larval stage of the fresh-water mussel (*Anodonta cygnaea*) in the belief that it was a distinct species parasitic upon *Anodonta*. This mussel retains its eggs until they hatch, and the glochidia which result from them are found at first attached to the gills of their parent. They are cast out in the outgoing current of water from the gills of the parent, and attach themselves to the fins of sticklebacks and other fishes, and are thus distributed to other parts of the pond or stream. The shell develops, and the young mussels then drop to the bottom.

Glockner, Gross. Twin-peaked mountain of the Noric Alps. It lies between Tirol, Salzburg, and Carinthia, and is the loftiest summit of the Hohe-Tauern range. Its two peaks are known as Grossglockner (12,455 ft.) and Kleinglockner, (12,350 ft.). The former was ascended for the first time in 1800 by Prince Salm-Reifferscheid. The Pasterze glacier is fed by the Glockner snows.

Glogau. Town of Germany, in Silesia. Situated on the left bank of the Oder, some 60 m. by rly.

N.W. of Breslau, it was a fortress of some importance, and has a cathedral. The industries include the manufacture of sugar, starch, pottery, and chemicals. The town has a large wine trade and iron-foundries, printing and map-making works. Pop. 24,524.

Glommen. River of Norway, the principal stream of the country. It rises in the Dovrefeld at an alt. of 2,338 ft., issuing from Lake Aursund. Flowing in a generally S. direction for 350 m., it falls into the Skager Rack at Frederiksstadt. Timber from the Osterdal region, the richest wood district in Norway, is floated down stream to Frederiksstadt. The drainage area of its basin is 15,925 sq. m., and its largest tributary is the Vorma.

Gloriana. Titular character of Spenser's allegorical poem, *The Faerie Queene*. Introduced in canto i, 3, as "That greatest Glorious Queene of Faeryland," she personifies both Glory and Queen Elizabeth, to whom the work is dedicated and who also figures in it as Belpheobe.

Gloriosa. Small genus of bulbous herbs of the natural order Liliaceae. Natives of tropical Asia and Africa, their branching stems bear lance-shaped leaves in pairs or whorls. These leaves have slender extended tips which act as tendrils, enabling the plants to climb. The rich orange and red flowers are reversed, their six undulated segments turning upwards, whilst the stamens and pistils spread out below.

Glory. British battleship of the Canopus (*q.v.*) class, now known as the *Crescent*. Launched in 1899, she was employed in the White Sea in 1919, and was appropriated for service at Rosyth as depot ship, returning from there in the autumn. Re-named the *Crescent* in 1920, she flew the flag of Admiral Sir H. L. Heath, Commander-in-chief, Coast of Scotland. The cruiser *Crescent* was known from 1920 as the *Crescent* (old).

Gloss (Lat. *glōssa*, obscure word). Note or remark in the margin of a book or between the lines, to explain words likely to be of doubtful meaning to the reader; originally employed by the copyists of old manuscripts to make the meaning clear. A collection of glosses forms a glossary, frequently put at the end of a volume, and often published as a separate work. See Manuscripts.

Glossitis (Gr. *glōssa*, tongue). Inflammation of the tongue. Acute glossitis may arise from injuries, bites, stings of insects, or over-administration of mercury, and is occasionally seen in acute fevers.

The tongue becomes swollen and painful, and speech, swallowing, and respiration are interfered with. Treatment depends upon the cause. In severe cases, leeches may be applied beneath the angles of the jaw, or incisions made into the tongue. If an abscess forms it should be opened. *See Tongue.*

Glossodia (Gr. *glōssa*, tongue). Small genus of terrestrial orchids. Natives of Australia, they have egg-shaped tuberous roots and a solitary lance-shaped, or oblong leaf. The flowering stem does not exceed 1 ft. in height, bearing one, two, or three blue or purple flowers, sometimes speckled with white. These are of more regular form than in most orchids. At the base of the lip of the flower is a long, tongue-like appendage which has suggested the name of the genus.

Glossop. Mun. borough and market town of Derbyshire. It is 13 m. S.E. of Manchester, having a station on the G.C. Rly. In the Manchester area, its chief industry is the manufacture of cotton. There are also dyeworks, bleachworks, and paper mills, while coal is mined in the neighbourhood. The chief church is All Saints, a modern building, and there is a fine Roman Catholic church. Much of the town, which includes Howard Town and Milltown, as well as Glossop proper, is built on land belonging to the Howards, one of whom bears the title of Lord Howard of Glossop and lives at Glossop Hall, a building in the French style. Glossop is on the edge of the Peak district, and near it is Longendale, with the Etheridge flowing through some fine scenery. It was made a borough in 1866. Market day, Sat. Pop. 21,688.

Glossopharyngeal Nerve. Ninth cranial nerve. It is the nerve of sensation to the upper part of the throat and tonsils; of taste to the back and posterior two-thirds of the side of the tongue; and of motion to the stylo-pharyngeal muscle; and middle constrictor of the pharynx.

Glottis (Gr.). Chink between the true vocal cords. It alters in size and shape with the degree of tenseness in the cords which also determines the pitch of the note emitted in speaking or singing.

Gloucester. City, co. of itself, parl. and mun. bor., port and co. town of Gloucestershire, England. It stands on the left bank of the Severn, 114 m. W. by N. of London on the G.W. and Mid. Rlys. and the Berkeley Canal (16½ m.), which connects the docks with those at Sharpness in the Severn estuary.

An abbey was established here in 681 and in 1022 a Benedictine

monastery was founded, the church of which, following the dissolution of the monasteries by Henry VIII,



Gloucester arms

became the cathedral in 1541, when Gloucester was constituted a separate see. Substantially Norman, the cathedral is a magnificent edifice, and contains the canopied shrine of Edward II, the shrine of Osric, king of Northumbria, and other fine monuments, and some beautiful stained glass windows. Other buildings include the 12th century church of S. Mary de Crypt, the episcopal palace, the guildhall, the prison, the King's School, and other educational institutions. The centre of the city is the Cross, the intersection of the four main streets, known as the Eastgate, Northgate, Westgate, and Southgate.

Remains of the ancient walls exist, and there are memorials to Hooper the martyr, and Raikes, the founder of Sunday-schools. There is a fine public park in which is a chalybeate spring, discovered in 1814. Gloucester has engineering and other works for the manufacture of railway carriages, engines, agricultural implements, machinery, oil and feeding

cake, chemicals and essences, and factories for making matches, pins, carpets, rugs, toys, etc. One member was returned to Parliament. Market day, Sat. Pop. 51,330.

Gloucester is one of the most historic of English cities. Commanding the passage of the Severn, it was probably the British Caer Glow, and the Roman Glevum. In Anglo-Saxon times it was also a fortified place, and occasionally the residence of kings. It was one of the three places at which William the Conqueror wore his crown. Several parliaments were held here and in every civil war, down to the one between Charles I and his foes, its possession was coveted.

Gloucester. City of Massachusetts, U.S.A., in Essex co. On the N. side of Massachusetts Bay, 32 m. N.E. of Boston, it is served by the Boston and Maine Rly. A port of entry and a popular summer resort, it has one of the finest harbours on the coast, and is the chief cod, halibut, and mackerel fishing centre in the U.S.A.

About 2 m. distant is Norman's Woe, the sunken rock of Longfellow's The Wreck of the Hesperus. Settled about 1634. Pop. 24,398.

Gloucester. British light cruiser of the Bristol (*g.v.*) class. She became famous for her effort to prevent the escape of the Goeben (*g.v.*). On Aug. 6, 1914, the Gloucester got into touch with the Goeben



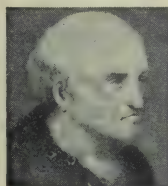
Gloucester. The cathedral from the south-east. In the foreground is the 15th century Lady Chapel

Frith

and the Breslau off the Straits of Messina, when they were running for the Dardanelles. She chased them as far as Cape Helles and frequently fired at them. She also took part in the battle of Jutland, May 31, 1916.

Gloucester, EARL AND DUKE OF. English titles now extinct. Like other counties, Gloucester had its earls in Norman times, one of these being Robert, a natural son of Henry I. The great family of Clare secured the title about 1218, and retained it until Earl Gilbert was killed at Bannockburn in 1314. In 1385 Thomas of Woodstock, a younger son of Edward III, was made duke of Gloucester, and after he had forfeited the title in 1397 it was held by two other well-known men: Henry IV's son Humphrey, and he who became Richard III. Later dukes of Gloucester were Henry, a son of Charles I; William (d. 1700), the eldest son of Queen Anne; and George III's brother, William Henry, created duke in 1764. He died in 1805, when his only son, William Frederick, known as Silly Billy, became duke. He married his cousin, Mary, daughter of George III, and when he died, childless, in 1834, the title again became extinct.

Gloucester, HUMPHREY, DUKE OF (1391-1447). Youngest son of Henry IV of England. Created



Humphrey,
Duke of Gloucester
From a portrait

duke of Gloucester, 1414, by his brother, Henry V, he was wounded at the battle of Agincourt and rescued by the king. He acted as regent during the king's absence in France, 1420-21, and was protector with but limited powers, at intervals, during the minority of his nephew, Henry VI. He died at Bury, Feb. 23, 1447, after arrest on a doubtful charge of treason, and was buried at St. Albans.

He was known as "the good Duke Humphrey" from the popular notion of him as a patriot. A patron of learning, he made many gifts to Oxford. *See* Humphrey; consult Life, K. H. Vickers, 1907.

Gloucester, THOMAS OF WOODSTOCK, DUKE OF (1355-97). English prince. The youngest son of Edward III, he was born at Woodstock, Jan. 7, 1355. A rich wife was found for him in the heiress of the Bohuns, and he was made constable of England and earl of Buckingham. Thomas's public life

almost covered the reign of his nephew, Richard II. Having fought in France, he took part in domestic affairs, and was the leader of those who put a check upon the



Thomas of Woodstock, Duke of Gloucester
From a portrait

arbitrary deeds of Richard in 1386; as the leader of the lords appellant in 1388, he crushed his enemies ruthlessly, and for a short time was the real ruler of England. Richard regained authority in 1389, but kept on good terms with the duke until 1396. Differences arising between them, Richard himself arrested Gloucester at Pleshey, his Essex castle, in July, 1397, and a little later his end came; most probably he was executed at Calais in September. His only son was not allowed to inherit his titles or estates.

Gloucestershire. Western co. of England. Its area is 1,243 sq. m., and it is 64 m. long. Very irregular in shape, it falls into three parts. In the west, lying between the



Gloucestershire
arms

Severn and the Wye, is the forest of Dean; the centre district is that of the Severn valley, and the east that of the Cotswolds. The chief rivers are the Severn, which flows right through the county and forms the estuary which makes it a maritime county, Wye, Upper and Lower Avon, and Thames, which rises here. Smaller ones are the Frome, Coln, Lech, and Leddon. The chief range of hills is the Cotswolds, famous rather for their quiet beauty than for their height, although some of the points exceed 1,000 ft.

Gloucestershire is mainly an agricultural county, although coal is mined in the forest of Dean. The valley of the Severn is noted for its rich pasture land, while here much wheat is grown. Cheese is made, cattle are reared, apples and pears are grown for making cider and perry. Sheep are plentiful on the Cotswolds. Cloth is manufactured, several of the small towns, especially Stroud, being noted for their broadcloth.

Gloucester is the county town, but Bristol is much the largest. Cirencester and Tewkesbury are noted for their architectural and historical associations. Cheltenham

is a watering-place and educational centre. A feature of the county is the number of picturesque market towns, among them Minchinhampton, Northleach, Nailsworth, Tetbury, Chipping Campden, and Winchcomb.

The county is served by the Mid. and G.W. Rlys. and by the Thames and Severn canal. It sends four members to Parliament. A hunting county, it supports several packs of hounds, while in cricket it holds a foremost place. It is in the Oxford circuit and mainly in the dioceses of Gloucester and Bristol. Pop. (1921) 757,663.

LITERARY ASSOCIATIONS. Robert of Gloucester was a 13th century rhyming chronicler. Another chronicler of a century later was Richard of Cirencester, but his life was mainly associated with Westminster. William Tyndale, first English translator of the Bible, belonged to a Gloucestershire family. A bishop of Bristol was Joseph Butler, author of *The Analogy of Religion*. William Warburton, critic and friend of Pope, was bishop of Gloucester.

Notable writers born at Bristol include William Grocyen, the Greek scholar, the water poet, John Taylor, Sir William Penn, Thomas Chatterton, and Robert Southey. John Keble, author of the *Christian Year*, was born at Fairford; Richard Graves, author of *The Spiritual Quixote*, at Mickleton; and Hannah More at Stapleton. Daniel and Samuel Lysons were natives of the county.

The Cicester of Shakespeare's Richard II is the modern Cirencester, while to the W. of the latter is Cirencester House, formerly known as Oakley Park, frequently visited by Swift and Pope. At Amberley, Dinah Maria Craik wrote her famous novel entitled *John Halifax, Gentleman*.

Among the many writers who have used Gloucestershire as background may be mentioned Shelley; T. E. Brown, for many years master at Gloucester and Clifton schools; and Sir Henry Newbolt; while Bristol and Clifton are scenes of diverting incidents in Dickens's *Pickwick Papers*.

Bibliography. Tourists' Guide to Gloucestershire, R. N. Worth, 1888; *The Bibliographer's Manual of Gloucestershire Literature*, F. A. Hyett and W. Bazeley, 3 vols., 1895-97, with Supplement by F. A. Hyett and R. Austin, 2 vols., 1915-16; *Victoria County History*, ed. W. Page, 1907, etc.; *By Thames and Cotswold*, W. H. Hutton, 2nd ed., 1908; *Memorials of Old Gloucestershire*, ed. P. H. Ditchfield, 1911; *Byways in Berkshire and the Cotswolds*, P. H. Ditchfield, 1920.

Gloucestershire Regiment.
Regiment of the British army.
Known by this name since 1881, it



Gloucester Regiment badge

represents the old 28th and 61st regiments of foot. It served under Marlborough, and helped to win the battle of Ramillies in 1706. At

Almanza the regiment incurred heavy losses; it was present at the battle of Fontenoy in 1745, and assisted at the capture of Louisbourg in 1758 and Quebec in 1759. In the battle before Alexandria (1801) the regiment repulsed the French attack on both sides, in commemoration of which the men enjoy the distinction of wearing the regimental badge on the front and back of their caps.

It fought in the Peninsular War, distinguishing itself at Talavera (1809), Salamanca (1812), and Toulouse. Later it won distinction at Quatre Bras and Waterloo, in the Punjab campaign, the Crimean War, and the Indian Mutiny. During the S. African War the Gloucesters shared in the defence of Ladysmith, the relief of Kimberley, and in the operations which led to the occupation of Bloemfontein, March 14, 1900.

The regiment fought with distinction in the Great War. The 1st battalion was in the retreat from Mons and at the battles of the Aisne and Ypres, 1914. It did splendid service at Loos, 1915, on the Somme, 1916, and in subsequent fighting. The 10th service battalion was singled out for mention by Lord French for gallant work at Loos, and the 1st-6th battalion



Gloucestershire. Map of the West of England county, showing the head of the Severn estuary

(Territorials) rendered excellent service in 1915-16 at St. Eloi, Wulverghem, and elsewhere. A stone obelisk is to be erected on the Ypres-Menin road near Hooze to commemorate the regiment's campaigns, 1914-18. The regimental depot is at Bristol.

articles, and some of her gloves are still extant.

The three rows of stitchery seen on the back of modern gloves are said to be a survival of these embroidered backs, though it is more probable that formerly the stitching of the fingers was extended to make the hand look long and slim. Modern forms of gloves include rubber ones worn by surgeons, electricians, etc., and padded gloves for boxing and for other sports and games.

Gloves as Symbols

Gloves have had their symbolic meanings. Thus it was the custom to wear gloves in the hat as the favour of a mistress, the memorial of a friend, and as a mark to be challenged by an enemy; and a glove was thrown down as a challenge to an enemy, who accepted battle by picking it up.

Gloves are believed to have been first made in England on a large scale by the monks of Bath. In the 14th century a guild of glove-makers came into existence in London, and the trade of making them was already a profitable calling. The prices of ordinary sheep-leather gloves were then fixed at 1½d. per pair, whilst the best gloves fetched 2d. a pair.

GLOVES AND GLOVE-MAKING

A. T. E. Binstead, of The Drapers' Organiser

Articles of related interest to this are those on Costume and the various items thereof, e.g. Boot; Hat. See also Leather

A glove is a covering for the hand. The custom of wearing gloves goes back to immemorial times. Xenophon refers to their use by the Persians. They were familiar to the Romans, who, however, generally despised their use, and were worn by the Anglo-Saxons in the 7th century. In those days there was only a separate division for the thumb, and it is doubtful if they were generally worn in England until some centuries later. A glove with two thumbs, so that it may be used for either hand, is still worn in Iceland. In the 13th century gloves made of linen and reaching to the elbow began to be worn for ornament, as well as for warmth

or protection. Leather gauntlet gloves were used for hawking, and knights when in full armour had gloves with metal entirely covering the back of the hand and overlapping the fingers. These were made flexible in the centre. Gloves were part of the imperial insignia in the Middle Ages, and are still worn ceremonially by the pope and the Roman Catholic hierarchy. In the gorgeous dress of the 15th, 16th, and 17th centuries gloves, perfumed, jewelled, or richly embroidered on the back, and decorated with fringed gauntlets, made their appearance. Queen Elizabeth was especially fond of these costly



Gloves. Processes in the manufacture. 1. Preparing and, 2. stretching the skins before cutting into shape. 3. Brushing dye into the skins. 4. Press and die (the latter shown in foreground) for cutting out. 5. Finishing and, 6. stitching silk on the backs



As early as 1190 the glove-makers of France had formed themselves into a company with S. Anne as their patron, while in Scotland the glove-makers of Perth were a chartered corporation in 1165. In England the glovers obtained a charter for their company in 1638.

Names and Materials

In considering the glove trade, it is well to have a clear idea of the meaning of the various names applied to gloves of various qualities. The name Cape, one of the first to be met with, was originally used to designate a glove from the Cape of Good Hope. The skin is large, heavy, and rather tight-grained. Latterly, however, the soft, pliable glove usually made from sheep and lamb skins tanned and dressed by the "nappa" method has become commercially known as Cape. What was once a name for a glove made from a single type of skin is now the designation of a glove made from leather of a particular tannage. The best types of these skins come from the district of Kasan and the Volga area in Russia. Others come from Spain, Turkey, Rumania, Bulgaria, Montenegro, and Serbia, and to a smaller extent from some other sources. The skins with the finest grades of wool are normally inferior for glove-making to those with hairy, wiry wool.

Lamb glove and Cape glove, when advanced to the stage of tanning known as "in the white," are virtually identical, except that the skins that make Capes are heavier and larger. It is in the finishing and colouring processes that the distinction occurs. The dressing and colouring which complete the tannage of Capes is done by the "drum" or "dipped" process, and the skin is coloured all the way through; whereas leather for the so-called lamb glove has the colour "brushed" on the grain surface only, leaving the flesh side or the inside of the glove white. The nappa tannage is an alum process, and besides there is a chrome tannage which has the merit of being washable in water of any temperature up to boiling point.

After much experiment a tannage was perfected for the skin of the Arabian haired sheep, resulting in the production of the strong, soft, and velvet-like finished Mocha glove. The Mocha sheep is a distinct type, not a species resulting from cross-breeding between the Mocha goat and the woolled sheep, as is frequently supposed. No other glove passes through so many processes in tanning and dressing as the Mocha, and while the appearance of the finished leather somewhat resembles suède, it is in fact very different in character. Mocha is "friezed," not "suèdèd." The finished or outer side surface of the gloves is on the grain, not the flesh side of the leather. The friezing process removes the grain, leaving much of the strength of the outer skin. The name suède is applied to a glove of leather when subjected to the suèding process.

Suède leather is generally inferior in strength, if not in appearance, to the same types of skins dressed on the grain side.

The chamois and the doeskin of commerce are both sheepskins, or parts of sheepskins, tanned and dressed as chamois or doeskins. Dealers and merchants in sheepskins find it advantageous to split the skins edgewise, thus providing two thinner skins. The upper part with the grain surface is termed a "skiver," and the lower a "flesher," and it is from these flesher sheepskins that the leathers known as chamois and doeskin are produced.

All gloves are practically subjected to the same process. After they have been stamped out the sewing process is carried out by machines. The first machine invented for glove sewing was put on the market about 1875.

British Developments

Not only in output, but in the quality and finish of the cloth from which gloves are made, British makers have made rapid progress, and the best fabrics of home production are equal to any pre-war foreign goods. Particularly is this true of the "suèdèd" cloth, a fabric so finished as to give it the velvety feel and appearance of suèdèd leather; and of "Duplex" cloth, which is made by sticking together two single cloths by processes which are more or less a secret. Before the war these cloths were almost entirely a German monopoly, but machinery has been produced which gives results equal to any German fabrics. The manufacture of dye-stuffs had also become a German monopoly, so that, not only were

cotton dye-stuffs difficult to get after the German dyes were shut out, but it was a long time before the British make approached the perfection and reliability of the imported article, with the result that the reliable dyeing of glove fabrics was a very difficult matter.

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Glovers' Company, THE. London city livery company. First mentioned in 1349, incorporated with the Leather-sellers in 1502, it was separately incorporated by letters patent in 1638. The site of the old hall, in Beech Lane, E.C., is covered by warehouses. The offices are 2, Moorgate Street Buildings, E.C.



Glovers' Company arms

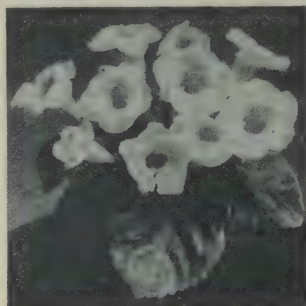
Gloversville. City of New York, U.S.A., in Fulton co. On the Erie Canal, 54 m. N.W. of Albany, it is served by the Fonda, Johnstown and Gloversville Rly. It contains a state armoury, a federal building, a public library, and the Nathan Littauer hospital. The chief glove-making centre in the U.S.A., its other industries include tanning and the manufacture of various leather articles. Settled about 1769 and for several years called Stump City, Gloversville was incorporated in 1851 and became a city in 1890. Pop. 22,314.

Glow Lamp. Alternative name for the incandescent electric lamp. It is so called from the fact that electricity is made to pass through a fine conductor, e.g. carbon filaments or platinum wires, causing them to glow. See Lighting, Electric.

Glow-worm. Name given to the female of the beetle *Lampyris noctiluca*. It is common in many parts of Great Britain and throughout central and southern Europe. While the male possesses large elytra and has the usual appearance of a beetle, the female is wingless and grublike in form, resembling a larva rather than a perfect insect. It derives its name from the presence of luminous spots on the abdomen, which appear to attract the male. See Beetle.

Gloxinia. Hot-house plants of the natural order Gesneriaceae. They are natives of Central Asia

and India, and were introduced into Britain in 1739. They reach an average height of 1 ft. and have elongated, bell-shaped blossoms of every possible shade and colour. They may be raised from



Gloxinia. Foliage and flowers of *G. sinningia*

seed planted in March in an ordinary greenhouse, or from the tubers potted up early in the year. Gloxinias need watering freely until they flower, but when the foliage withers, water should be gradually diminished in supply until the tubers are quite dry. There are about six species in cultivation, but the hybrids are innumerable.

Glucinum. Variant name of the chemical element beryllium (*q.v.*).

Gluck, CHRISTOPH WILLIBALD von (1714-87). German composer. Born at Weidenwang, Bavaria, July 2, 1714, he studied music at Prague and later at Milan. After producing a number of operas of the conventional type, he realized the need of drastic reforms in the character of opera and introduced these into his works. His *Orfeo ed Euridice*, produced in 1762, is a landmark in the history of opera, and shows his ideas of making the relation of the music to the poetry more harmonious, resembling that between the arrangement of light and shade in drawing.

His opera *Iphigénie en Aulide* (Paris, 1774) was the occasion of a struggle between the two musical schools in which Gluck's party was victorious over the followers of Piccini. Gluck was at one time music master to Marie Antoinette. For long he resided in Vienna and received from the emperor the title of Ritter von. He died there, Nov. 15, 1787.



Gluck

Glucose. Dextrose or grape sugar. It is a carbohydrate present in many fruits, and in honey. It is the form of sugar which is present in the blood in the disease diabetes. Under the influence of yeast it is converted into ethyl alcohol and carbonic acid. See Dextrose; Sugar.

Glucosides. Class of substances, occurring in the vegetable kingdom, which yield glucose (dextrose) on fermentation or by the action of dilute acids. Among the glucosides there are several which are employed in medicine, as digitalin, digitonin, and digitoxin obtained from foxglove (*Digitalis purpurea*); jalapin from *Ipomoea orizabensis* and *Convolvulus scammonia*; salicin from the willow, and strophanthin from strophanthus seeds. Some glucosides yield hydrocyanic (prussic) acid, and have caused the death of cattle. Saponin is a glucoside to which the frothing properties of many plants are due.

Glue. Impure gelatin used for its adhesive qualities to hold together various substances, chiefly wood. It is prepared from both the skins and bones of animals, the skins producing a far stronger glue than the bones. Fish glue is prepared by boiling the skin and tissue of cod and other fish, and properly manufactured is as good as hide glue. Liquid glue is glue which has been treated with nitric or acetic acid to prevent it from gelatinising, without destroying any of its adhesive qualities. Marine glue is a solution of rubber and shellac in naphtha or benzene, and is used in shipbuilding for its property of resisting moisture. A mixture of linseed oil and quicklime heated together is another form of waterproof glue. There are a large number of other varieties of glues prepared for special purposes, as repairing glass, ivory, etc., and many of these contain no gelatin.

During the Great War the manufacture of the best glues became of great importance with the sudden increase in the demand for them in connexion with aeroplanes. The necessity for having a reliable glue brought to light the fact that the study of gelatins and allied products had been neglected by British chemists, though a certain amount of research had been carried out by foreign chemists.

When prepared from skins, glutin is the main adhesive constituent, and chondrin from bone tissues. The bones chiefly used are the heads, ribs, shoulder blades, etc., of cattle, horses, etc. They are thoroughly sorted, passed through a mill to crack them, and then placed in solvents, benzol, or petroleum ether, for the extraction of the

unnecessary fat. The cleansed bones are afterwards placed in a vertical boiler and steam-treated for the extraction of the glue, and then purified in shallow vats by heating with alum, oxalic acid, or blood.

Hide glues vary considerably in strength with the part of the animal from which the skin comes. Clippings and waste, useless for leather-making, make excellent glue. The skins are steeped in milk of lime in wooden vats or cement pits for two or three weeks, then washed thoroughly and dried, the glue afterwards being extracted by slow boiling in open or closed vessels. Scotch glues are manufactured by placing the hides in a loosely woven sack lowered into a cauldron of water which is gradually brought to the boil.

Glukhov. Town of Ukraine, in the govt. of Tchernigov. It is on the Moscow-Kiev-Voronezh rly., 175m. E. of Tchernigov. There are rope and brick works, breweries, and distilleries. Glukhov was once the residence of the hetman of the Little Russian Cossacks. Pop. 15,000.

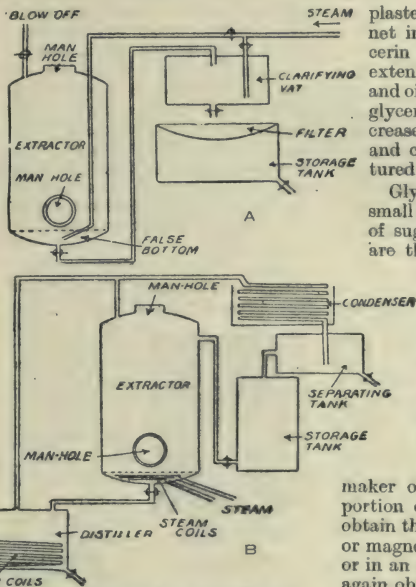
Gluteal Muscles. Three muscles, the *G. maximus*, *medius*, and *minimus*, which form the fleshy mass of the buttock (Gr. *gloutos*, rump). Their principal action is to extend the thigh or straighten the body after stooping. They also assist to move the thigh outwards and rotate the leg outwards.

Gluten. Tough, elastic substance obtained from wheat flour by washing it with water. The flour is enclosed in a muslin bag and kneaded under water. The starch is washed away, and the gluten, about 10 to 12 p.c. of the flour, remains. Bread and biscuits made from gluten are used as food by patients suffering from diabetes who are required to avoid the use of starchy food. Gluten is a compound of two substances, one soluble and the other insoluble in alcohol. The soluble portion can again be separated into mucedin and gliadin.

Glutton OR **WOLVERINE** (*Gulo luscus*). Carnivorous mammal of the weasel group, found in the



Glutton or wolverine, a species of weasel
W. S. Berridge, F.Z.S.



Glue. A, plant for extracting and clarifying glue; B, plant for degreasing bones

northern districts of Europe, Asia, and N. America. It does not now occur in Great Britain, but its fossil remains are not uncommon. It is nearly 3 ft. in length, has dark brown fur, and a short, bushy tail. Of heavy build, it walks with something of the action of a bear, is found in forests, is nocturnal in habit, and devours any animal it can catch. It is particularly expert in digging rabbits out of their burrows.

Glycas, MICHAEL (12th century A.D.). Byzantine historian. Probably a native of Sicily or Corcyra, he was the author of a general history of the world from the earliest times down to 1118, the end of the reign of Alexius I Comnenus. The work is written in a simple style than most of the Byzantine histories.

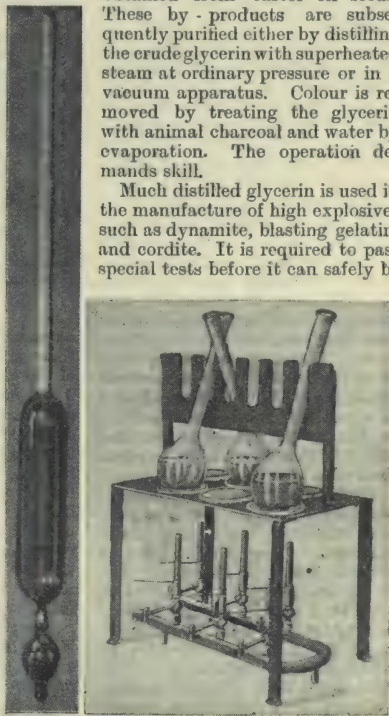
Glycerin OR **GLYCEROL**. [$C_3H_7(OH)_3$]. Thick colourless liquid with a sweet syrupy taste, obtained by the decomposition of fats and oils in the process of making soap and candles. It was discovered by Scheele in 1779 as a by-product in the manufacture of lead

plaster. Chevrel and Braconnet in 1817 showed that glycerin is a component to the extent of 9 to 11 p.c. of all fats and oils. The discovery of nitroglycerin by Nobel in 1863 increased the demand for glycerin and caused it to be manufactured on a large scale.

Glycerin is produced to a small extent in the fermentation of sugar, but the chief sources are the waste products of the soap and candle maker. When fats and oils are saponified with a caustic alkali, the fatty acids combine with the soda or potash, and glycerin is formed as a by-product. This "sweet-water," as it is called, is afterwards purified and concentrated. The candle-maker only requires the harder portion or stearin of fats, and to obtain this heats the fats with lime or magnesia, either in open vessels or in an autoclave, glycerin being again obtained as the by-product.

Other methods of obtaining glycerin from fats are by the acid saponification process, Twitchell's process, and by the use of a ferment obtained from castor oil seeds. These by-products are subsequently purified either by distilling the crude glycerin with superheated steam at ordinary pressure or in a vacuum apparatus. Colour is removed by treating the glycerin with animal charcoal and water by evaporation. The operation demands skill.

Much distilled glycerin is used in the manufacture of high explosives such as dynamite, blasting gelatin, and cordite. It is required to pass special tests before it can safely be



Glue. Left, glue tester. Right, stand of Khedjahi Basks used to estimate the percentage of glue in organic substances

used for the manufacture of explosives. The purest glycerin is employed for medicinal purposes, and it is necessary that arsenic, a common impurity in glycerin, should be entirely absent. Glycerin is also employed for filling gas-meters and hydraulic jacks, for giving body to light wines, in liqueurs, and in the manufacture of copying inks, shoe polishes, printers' rollers, copying graphs, and numerous toilet preparations.

Glycocol, GLYCIN OR AMINO-ACETIC ACID ($C_2H_3NO_2$). Discovered by Braconnet in 1820, and prepared by boiling glue with sulphuric acid or caustic potash. It is best made by warming hippuric acid with four times its weight of fuming hydrochloric acid, diluting with water, filtering out the benzoic acid which deposits, and evaporating the liquid to dryness. Glycocol has a sweet taste, and its solution is coloured deep red by iron chloride and deep blue by copper salts.

Glycogen. Carbohydrate related to dextrin. It was first discovered by Bernard in 1820, and found in small quantities in other organs of the body. Glycogen is best prepared in the pure state from liver by boiling with water, removing the proteins by adding potassium or mercuric iodide and hydrochloric acid. The glycogen is then precipitated by adding alcohol. The method of formation of glycogen in the liver is not well understood, the quantity present depending upon the food taken. Glycogen is looked upon as a reserve food deposited in the liver, which is transformed into fat and sugar.

Glycol OR ETHYLENE ALCOHOL ($C_2H_6O_2$). Colourless liquid with a sweet taste, discovered by Wurtz in 1856. It is best prepared by boiling 138 grammes of potassium carbonate with 188 grammes of ethylene bromide dissolved in a litre of water. This operation is conducted in a flask fitted with a reversed condenser. The ethylene alcohol is separated from the resulting liquid after the potassium bromide, which is also formed, has crystallised out.

Glycosmis (Gr. *glykys*, sweet; *osmē*, smell). Small genus of trees and shrubs of the natural order Rutaceae. They are natives of tropical Asia and Australia. The leaves are divided into three or more leaflets, and the small white flowers are fragrant. The fruits are small edible berries, those of *G. citrifolia* being esteemed by the Chinese for their delicious flavour.

Glycosuria (Gr. *glykys*, sweet; *ouron*, urine). Temporary form of diabetes characterised by the

presence in the urine of sugar, from which it is free normally. The condition may be due to an excessive quantity having been taken into the system, or to the action of drugs, such as chloroform. The chronic form of glycosuria which marks *diabetes mellitus* is due to a failure of the muscular tissue to utilise sugar, which consequently overloads the blood and escapes by the kidneys into the urine. See Diabetes.

Glyn, ELINOR. British novelist. Daughter of Douglas Sutherland, of Toronto, and wife of Clayton Glyn,



Elinor Glyn,
British novelist

Hoover Art Studios,
Los Angeles

Weeks, 1907; His Hour, 1910; The Sequence, 1913; and The Career of Katherine Bush, 1916.

Glyptodon (Gr. *glyptos*, carved; *odous*, tooth). Genus of extinct armadilloes, whose fossil remains



Glyptodon. Skeleton of *G. clavipes* from the Pampa formation of Buenos Aires

British Museum

have been found in the post-tertiary deposits of S. America. Some of these fossils represent an animal 9 ft. in length. The armoured carapace, instead of being in bands as in existing armadilloes, permitting the animal to roll up hedgehog-fashion, was solid and continuous, like the carapace of a tortoise. The head, feet, and tail emerged from under this dome, but the head was protected by a bony cap, and the tail covered by tubercled bony rings. The carapace was beautifully sculptured in small rosette patterns. The name was suggested by the deep ridges and grooves into which the surface of the molar teeth are moulded. See Fossils.

Gmünd OR SWÄBISCH-GMÜND. Town of Germany, in Württemberg. It stands in the valley of the Rems,

29 m. E. of Stuttgart. Formerly a free imperial city, it has some interesting churches, including that of the Holy Cross (14th century) and the pilgrimage church of S. Salvator, with two chapels hewn out of the rock. Gmünd is noted for its gold and silver ware, wood-carving, etc. Pop. 21,312.

Gmunden. Town and pleasure resort of Upper Austria. In the Salzkammergut, it stands at a height of 1,400 ft. where the Traun leaves the Traun-see, 38 m. E.N.E. of Salzburg. The Traunstein rises sheer from the margin of the lake to a height of 5,550 ft. Gmunden is a centre for hill and lake excursions. In addition to the Salzkammergut museum there is a kursaal. There are salt mines in the vicinity. Pop. 7,700.

Gnat. Popular name for certain small dipterous (two-winged) insects of the Culicidae family. Some nine species occur in Great Britain. The larval stage is passed in stagnant water, and the adult insects are most abundant in marshy districts. Blood-sucking in habit, they are also known as mosquitoes (*q.v.*).

Gneisenau. German battle cruiser. She was the flagship of Admiral von Spee, who commanded the German squadron in China Seas at the outbreak of the Great

War. This, the most efficient squadron in the German Fleet, consisted of the Gneisenau and Schamhorst, and the light cruisers Leipzig, Dresden, and Nürnberg. On Nov. 1, 1914, Von Spee met Cradock's squadron at Coronel and crushed it by superior gun power.

But on Dec. 8 of the same year Von Spee was caught by Sturdee's more powerfully armed squadron off the Falklands, and all the German ships were destroyed. See Coronel; Falkland Islands, Battle of the.

Gneisenau, AUGUST WILHELM ANTON NEITHARDT, COUNT VON (1760-1831). German soldier. The



A. von Gneisenau,
German soldier

son of a soldier, he was born Oct. 27, 1760, and was educated at the university of Erfurt. He served first in the Austrian army. With a German contingent he was in America in the British service

during the war of independence, and then he entered the army of Prussia. There he made his way to the front, and when, in 1806, Prussia again took up arms against France, he was known as a capable officer.

Gneisenau next helped in the work of reorganizing the Prussian army, and in the war of liberation served Blücher as chief of the staff. He was responsible for the plan of campaign of 1814, and for that of the battles around Waterloo, and to him was due the ruthless pursuit of the French. In 1818 he was made governor of Berlin and a member of the Prussian council of state. In 1830 he was appointed to command an army on the frontier of Poland, and he was there when he died of cholera, Aug. 24, 1831. The standard life is by G. H. Pertz and H. Delbrück, 1864-80.

Gneiss (German). Composite rock consisting of quartz, feldspar, and mica in varying proportions and arranged in parallel layers (schistose). It may be fine-grained in thin layers, or the latter may be so thick and uneven that the laminated structure is obscured. Often one of the constituent minerals predominates greatly over the others. There are many varieties of gneiss named from the predominant mineral, including hornblende-gneiss, augite - gneiss, graphite - gneiss, chlorite-gneiss, and others, the prefix indicating the mineral that wholly or in part replaces the mica. Where the gneiss has well-marked foliated structure it is considered to be a true metamorphic rock; the coarse-grained kinds that show only rudely parallel layers may be eruptive. Varieties which split flat are useful in building work. *Pron.* Nice.

Gneist, HEINRICH RUDOLF HERMANN FRIEDRICH VON (1816-95). German jurist. Born at Berlin,



Rudolf Gneist,
German jurist.

Aug. 13, 1816, the son of a judge, he was educated at Eisleben and the university of Berlin. He became a lawyer, but its study rather than its practice attracted him, and in 1844 he was made professor at Berlin.

From 1858 to 1893 he was a member of the landtag of Prussia; in 1868 he was elected to the diet of the North German Confederation, and from 1870 to 1884 he was a member of the Reichstag. In all he was an active member of the National Liberal party, and was



Gnesen. View of the town and cathedral across the river Wrzemia

active also as an advocate of legal reforms. From 1875-77 he was a judge of the supreme court of Prussia, and for a time was tutor to the emperor William II. He died July 22, 1895. His works on England include *The English Parliament*, 1886, and *History of the English Constitution*, 1886.

Gnesen (Pol. *Gniezno*). Town of Poland. It is 31 m. E.N.E. of Posen on the line to Thorn, and was formerly in the German prov. of Posen. Poland's kings were crowned here, down to 1320. It has been the seat of an archbishop since 1000. The cathedral, founded in the 9th century, and largely rebuilt at the close of the 18th century, contains the tomb of S. Adalbert (*q.v.*) and bronze doors dating from the 12th century. The archiepiscopal palace is also noteworthy. There are manufactures of sugar, leather, and machinery, and a trade in dairy products, also breweries, flour, and mills for other products. Pop. 25,339.

Gnome. Small legendary being in the folk-tales of many peoples, supposed to dwell in the earth and guard the treasures hidden there. Gnomes, dwarfs, and elves become almost inextricably interlinked in the folk-tales, though the elves are generally smaller, more fairy-like creatures, while the gnomes or earthmen are more akin to the black dwarfs of North European folklore. *See* Folklore.

Gnome (Gr. *gnōmē*). Maxim, aphorism, or reflection summing up or stating concisely a general truth. The Greek Gnostic poets were those who wrote sententious didactic verses, such as Solon, Theognis, Phocylides, and others.

Gnome Engine. First successful aero-engine of the radial-revolving or rotary-radial type. This motor, of French invention, was introduced in 1909.

In the Gnome the cylinders are grouped star-wise round a central crank-case. There are usually seven or nine cylinders, or there may be a double group of fourteen or eighteen cylinders arranged in two groups, one behind the other. The Gnome has only one crank, and there is one master connecting-rod which en-

circles the crank-pin. To the big end of the master connecting-rod the big ends of the other connecting-rods are hinged. The cylinders and the crank-case rotate about the crank-shaft. By its rotation it cools itself, thus dispensing with water cooling and all its complications. *See* Aero-engine; Monosoupape.

Gnosticism (Gr. *gnostikos*, knowing). Term usually applied to the heresy with which were concerned sects that sprang up in the 1st century A.D., the members of which claimed mystical knowledge denied to the rest of the world. The name was adopted first by the Ophites.

Gnosticism existed before Christianity. Originating in the East, it embodied attempts to formulate a cosmic philosophy or theory of the universe, and a quest for a world religion. An example of syncretism, an effort to blend opposite and conflicting ideas into a harmonious whole, its sources were Zoroastrianism, Buddhism, and accretions from Judaism, Mithraism, the mythologies of Babylon and Egypt, and Platonism.

While, broadly speaking, Gnosticism was a form of dualism—mind and matter; light and darkness; good and evil—it embodied not one but protean forms of thought. It is characterised by association with the idea of emanation, a theory of creation which postulates One Supreme Being from whom lesser beings or aeons have emanated as light emanates from the sun. From the fall of one of these lesser beings into the outer void arose a Demiurge, regarded as the embodiment of evil, from which redemption is only possible for two of the three classes into which Gnosticism divided mankind, by re-union with the Infinite—a state comparable with the Buddhist nirvana. An example of a Gnostic view of Jesus Christ is in the apocryphal epistle of Barnabas (*q.v.*).

Gnosticism assumed a new form after the rise of Christianity; and gained a strong foothold in the 2nd century. Information about the leading Gnostics and their writings is largely derived from the anti-heretical treatises of the Christian

Fathers—Irenaeus, Tertullian, Hippolytus, Epiphanius, Ignatius, and Justin Martyr; from the Pistis Sophia, a 3rd century Coptic work; and remains of apocryphal gospels and epistles.

Gnostics interpreted the Scriptures for their own purpose; and one result was the formulation by the Catholic Church of its standards of orthodoxy, of dogmatic theology based upon what could be shown historically to be derived from Christ and His apostles. Gnosticism declined in the 3rd and died out in the 6th century, but was reflected in Manichaeism, an attempt to fuse Zoroastrianism, Gnosticism, and Christianity; in Paulicianism; in the beliefs of the Cathari and Albigenses; and in Rosicrucianism.

The reputed founder of post-Christian Gnosticism was Simon Magus (see Acts 8), the supposed author of a work called The Great Revelation, of which only fragments remain. It had two prominent schools; one in Alexandria, of which Basilides, Valentinus, and Carpocrates were leaders, and one in Syria, of which Saturninus and Cerdo were among the teachers. The last leader of note was Marcion, who conceived three primal forces: the good God, revealed by Jesus Christ; evil matter, ruled by the devil; and the Demiurge, identified with the Yahveh of the Jews.

The sects wavered between extremes of asceticism and sensual immorality; and included, in addition to those named after their leaders, the ascetic Encratites or Continentes, and the serpent worshipping Ophites or Naaseni. One influence that worked against Gnosticism, by means of a rival theory of the universe, was Neoplatonism (*q.v.*). An important branch of study in connexion with the heresy is concerned with its elaborate and mystical symbolism, secret terminology, and use of inscribed talismans and amulets. The supposed Scriptural references to Gnosticism, *e.g.* John 1; 1 Tim. i, 4; 2 Tim. ii, 18; Tit. iii, 9, are debatable. See Abraxas; Doctism; Ophites; Valentinians.



Gnu. White-tailed variety, a native of Africa

Gambier Bolton, F.Z.S.

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Gnu or WILDEBEEST. Genus of large antelope, differing from all other genera in having heavy heads and necks which somewhat suggest the appearance of a small bison. There are two species, the white-tailed and the brindled, both natives of Africa. The horns curve downwards and then upwards. The muzzle is remarkably wide, the neck has an erect mane, and the tail has long thick hair almost like that of a horse. The animal stands rather more than 4 ft. high at the shoulder, lives in the open country, and is generally found in company with the zebra. See Antelope.

Goa. Portuguese colony on the W. coast of India. Bounded by the Bombay presidency, its area is 1,469 sq. m. It is a fertile region, producing rice, spices, copra, coconuts, salt, pepper, and betel nuts. The trade is chiefly transit. It contains the town of Panjim or New Goa, the capital of Portuguese possessions in India since 1845. Except for some of its churches, still in excellent preservation, Old

Goa, once the wealthiest city in India, is now a city of ruins. The colony has belonged to Portugal since its capture by Albuquerque in 1510. Pop. of settlement, 515,772.

Goajira. Territory of Colombia, S. America. A peninsula jutting into the Caribbean Sea, on the N.W. shore of the Gulf of Maracaibo, it is low-lying and sandy on the coast, with the Oca Mts., a N.E. extension of the Andes, inland. Area, 5,000 sq. m. Puerto Estrella is the capital. The native Indians, virile and independent, are as yet little influenced by civilization. Claimed by both Venezuela and Colombia, it was given to the latter republic after arbitration in 1891. Pop. 53,013.

Goal (Fr. *gaule*, a pole). Originally a mark set up to show the end of a race. It has thus come to be a synonym for an end or aim. In football matches the score is counted by goals, a goal being scored when the ball is kicked between the goal posts. See Football.

Goalanda or GOALUNDO. Village and subdivision of Bengal, India, in the Faridpur district. Goalanda village is 151-m. N.E. of Calcutta, and is the terminus of the Eastern Bengal Rly. and an important steamer station.

Goalpara. District and town of India, in W. Assam. It lies to the S. of Bhutan, and, although fertile, is very unhealthy. The town is the capital of the district, and stands on



Goa. The church of Bom Jesus, built in 1594, in which is buried S. Francis Xavier, the apostle of the Indies

the river Brahmaputra, 80 m. N.E. of Rangpur. Pop. about 5,100.

Goat. Genus of the family Bovidae, which includes also oxen, sheep, and antelopes. The goats are placed between sheep and antelopes, and it is difficult to distinguish them from sheep. Certain species of wild sheep approach goats very closely in structure and appearance.

Goats differ from sheep in the bony structure of the skull, and the horns are placed close together immediately above the eyes. The

males are usually bearded, and have a strong odour. They lack the glands on the hind feet, and have callosities on the knees. While they live in herds, they associate less intimately and are of more independent disposition than sheep. The flesh of the kid is excellent, but that of the adult is apt to be tough and rank.

The goat in its wild state inhabits the Eastern hemisphere exclusively, the so-called Rocky Mountain goat of N. America not being a true goat, but belonging to a genus approaching the antelopes. It is widely spread in S. Europe and Asia, but in Africa only occurs wild in Egypt and Abyssinia. So far as is known, the wild goat has never inhabited the British Islands, the so-called wild goats of some parts of Scotland and the Achill Islands being domesticated goats that have taken to a feral life. Only about ten species of wild goat are recognized by naturalists, and of these three or four are more generally known by the name of ibex (*q.v.*).

The true wild goat is a native of Persia, Asia Minor, and some of the Mediterranean islands, and it is from this species that the domesticated goat has descended. The varied form of the horns in domesticated varieties suggests their mixed origin. Its domestication dates from prehistoric days, for its remains have been found in the Swiss lake dwellings, and it was well established in the earliest Egyptian period. Among domesticated breeds may be especially mentioned the Cashmere and Angora goats, noted for their very valuable silky hair. See Cashmere Goat.

GOAT KEEPING. Goats are kept in large numbers in many countries, both for the sake of their hides and hair, and also as a source of dairy products. Their value is not fully realized in Great Britain, although a British and an Irish goat society have both done valuable work. To cottagers and smallholders the goat is of particular value as a milk producer. It is very hardy, easy to keep, and thrives on a miscellaneous diet.

Value of Goats' Milk

Goats' milk is relatively rich in butter-fat and casein, its percentage composition being: water, 85.71; casein, 3.20; albumin, 1.09; milk-sugar, 4.46; fat, 4.78; ash, 0.76. Goats are almost free from tuberculosis, and infants fed on their milk not only thrive but are saved from the danger of contracting this disease. If perfect cleanliness is maintained, especially by careful washing of the udders before milking, the unpopular "goaty" flavour is en-



Goat. 1. Toggenburg. 2. Nubian. 3. Anglo-Nubian. 4. Irish. 5. Anglo-Nubian goatling

tirely prevented. Butter made from goats' milk is white and unattractive looking, but this can be got over by the addition of colouring matter. Goat cheeses are much esteemed in many countries. A goat is not worth keeping unless it yields at least 2 quarts per day at kidding, but this amount is often largely exceeded. To secure good results a suitable breed must be selected, and breeding must be carried out from milking strains. The Toggenburg breed is most esteemed, after which come Anglo-Swiss and Anglo-Nubian crosses.

The best time for mating is Sept. to March, but by using the foreign breeds or crosses with them, kidding can be arranged for any time, and a winter supply of milk ensured. Kids not required for addition to the herd are killed at birth, especially the male. Those which are kept require suckling for two or even three months. Except for a little corn, summer feeding (May to August) costs hardly anything, the animals being tethered on rough grazing. At other times the grass available must be supplemented by a miscellaneous ration, which may include hay, roots, offals, cake, and various scraps, such as potato-peelings, garden refuse, and acorns. Water and salt must be provided. A few animals can be housed during winter in any available building, but a herd should be accommodated in a suitably constructed goat-house. See The Book of the Goat, H. S. H. Pegler, 5th ed. 1917.

Goathland. Parish and village of N.R. Yorkshire, England. It is 8 m. S.W. of Whitby, on the N.E.

Rly. Here is a cottage colony for disabled officers. Goathland Moor lies 2 m. S. of the village, and is noted for its cataracts. Pop. 519.

Goat Moth. Large moth of the genus *Cossus*, common in most parts of Great Britain. The fore wings,



Goat Moth. Specimen of *Cossus ligniperda*

often over 3 ins. in expanse, are pale grey clouded with brown, with a kind of network of fine brown lines. The hind wings are grey, with very fine reticulations. The caterpillar is flesh colour, with reddish brown patches, and is almost hairless. It has an offensive goatlike smell, from which the moth derives its name. It lives in the wood of willow and other trees, and as it takes three years to come to maturity, does great damage to the timber. It is about 3 ins. long.

Goat's-beard (*Tragopogon pratensis*). Perennial herb of the natural order Compositae. A native of Europe and N. and W. Asia, it has a tap-root with milky juice, and the slender, alternate leaves, which clasp the stem at their

bases, taper to a long point. The solitary flower head is yellow, with 7 or 8 slender bracts. The head opens about 4 a.m. and closes as soon as pollinated, whence the popular name John-go-to-bed-at-

noon. The fruits form a "clock" like those of the dandelion, but larger and

mining, large openings or stalls are left in the coal face, separated from one another by a wall of coal which is left standing. When all the coal has been got from a stall, it is filled with refuse or waste material that may be at hand. Material so employed is called by the miner gob, or goaf, though the latter term is more generally reserved for the stall itself from which the coal has been removed, the plural "goaves" being the form generally used.

This use of the term gob has doubtlessly arisen from the similarity between the appearance of the opening into a stall and a huge mouth, the word being vulgarly used in many parts of the country for a mouth or

mouthful. Gob corresponds to the attle or deads of the metal miner.

Gobelin, JEAN (d. 1476). French dyer. A native of Reims, he founded in 1450 a dyeworks and cloth factory on the banks of the Bièvre, in St. Marcel, a suburb of Paris. The firm was renowned especially

for scarlet wool, but probably the works would never have enjoyed more than a local reputation had not Henry IV, about 1603, purchased from the Gobelin family part of the land adjoining the dye-house. Here tapestry sheds were erected for Marc de Comans and François de la Planche, two expert designers, but the establishment was still called by its old name, which gradually became attached to the new products.

Gobelin. Tapestry named from Jean Gobelin. In 1667 Louis XIV consolidated the royal Parisian tapestry workshops at the Hôtel de Gobelins. Charles Le Brun and eminent artists provided magnificent designs such as *The History of the King*. After a period of suspension, work was resumed in 1697. Smaller tapestries, *portières* of the Gods, etc., were made under Louis XV, but prosperity returned with the beautiful designs of Boucher. The Revolution crippled the industry, but later the designs of Baudry brought success. During the Commune the works were nearly destroyed. Modern tapestries from designs by Galland adorn the Comédie Française, others by Toudouze are in the Palais de Justice, Rennes. Many replicas of ancient works have been executed at the Gobelins. See Tapestry.



Goat's-beard. Left, the growing herb; right, puff or head of fruit

more beautiful, the parachute of each fruit having its arms feathered. The salsify (*T. porrifolius*), grown as an esculent root, belongs to the same genus. Its flowers are purple.

Goat's Rue (*Galega officinalis*). Perennial herb of the natural order Leguminosae. A native of S.



Goat's Rue. Flowers and leaves of the S. European herb

Europe, it has a stout, creeping rootstock, and the compound leaves consist of about 15 lance-shaped leaflets. The leafy stems are about 4 ft. high, with a flowering branch at the base of each of the upper leaves. The pea-like flowers are blue, but there is a variety with pure white flowers. It was formerly made into a cordial for administration in fevers and convulsions.

Goatsucker (*Caprimulgus europaeus*). Popular name for the nightjar (q.v.).

Gob. Waste material used in coal mines for filling up stalls. In the pillar and stall system of coal



Gobelin. Example of a piece of tapestry depicting a scene from the adventures of Don Quixote, entitled *Don Quixote led by Folly*, from a cartoon by C. A. Coypel (1694-1752)

Gobi. Eastern section of the desert of Central Asia, mainly in Mongolia, China. The fractured tableland of Mongolia terminates on the N. at a scarped edge overlooking Siberia; from this edge the land rises towards the Inshan and Khingian Mts., of which the E. and S.E. slopes form an escarpment facing the valley of the Hoang-ho. The average level of the plateau is 4,000 ft.

The climate is one of great extremes, and is practically rainless, with the result that there are no large rivers. Nomad pastoral tribes are the only inhabitants; they find sustenance for their camels and sheep at the water-holes; but vast expanses of sand dunes, marked by a silence undisturbed by any form of life, prevent communication between China proper and Siberia.

Westward the desert area narrows and leads between the Tianshan and Kuen-lun ranges to the Tarim basin, which forms the basin of internal drainage of Lob Nor; this is the Chinese province of Sin Kiang, Eastern Turkistan, where the scanty rainfall ameliorates the harsher desert conditions of the east. In the dim geological past, the Gobi, known to the Chinese as Shamo, was covered by the eastern portion of a great sea, of which the Caspian and Mediterranean are modern relics. To the N.E. was the ancient continent of Angaraland, and to the S. that of Gondwanaland. The tilting of the plateau and the rise of the Kuen-lun ranges, including the Khingian Mts., are a more recent development. *See* Asia; Desert.

Goblet, RENÉ (1828 - 1905). French politician. Born Nov. 26, 1828, he became a lawyer at Amiens. He also did some journalistic work, and in 1871 was elected to the national assembly for the Somme; he soon made a reputation by his speeches, where, as in his writings, he gave utterance to advanced views. In 1882 he was made minister of the interior and in 1885 minister of education. In 1886-87 he was prime minister, his short-lived cabinet having to deal with the arrest of Schnaebele by the Germans and the beginnings of Boulanger's agitation. In 1888 he was foreign minister, and he remained in public life, although not taking office again, until 1898. He died in Paris, Sept. 13, 1905.

Goblets, THE. Pair-oared boat race rowed annually at Henley-on-Thames. It was inaugurated in 1845, and its full title is The Silver Goblets. *See* Henley Regatta.

Goblin (Gr. *kobālos*; late Lat. *gobelinus*; Ger. *Kobold*). Mischievous or evil being. The word is supposed to derive from the Gr. *kobālos*, a sprite, a rogue, and to be the same as the Ger. *Kobold*, spirit or demon of the mine; another origin suggested is that of the Gobelius or demon which S. Taurinus drove from a temple in Normandy; while yet another, and somewhat ridiculous, derivation has made elf and goblin to be but Guelf and Ghibelline in a new form. Goblin has come to be applicable to any frightening phantasm. *See* Folklore.

Goby (*Gobius*). Large genus of fishes. Several species occur round the British coasts, especially in rocky neighbourhoods. Small in size, the pelvic fins are modified to form a sucker by which they can attach themselves to rocks. The

spotted goby (*G. minutus*) is often found at a considerable distance up the Thames, and constructs a curious little nest in the sand for its eggs.

G.O.C. Abbrev. for general officer commanding. Military term to designate the senior officer of general's rank in command of any district or branch of the service in that district. Thus, the G.O.C. of the eastern command is the general in command of that area, and the G.O.C.R.A. eastern command is the general commanding the artillery in the same area.

Goch. Town of Germany, in the Prussian Rhine province. It stands on the Niers, 66 m. from Cologne. A railway junction, it has several small manufactures. In the Middle Ages it was part of the duchy of Cleves, and a centre of the linen trade. Pop. 11,000.

GOD: THE SUPREME BEING

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Cognitive articles in this work are those on Heaven; Jesus Christ; Trinity, The. See also Christianity; Deism; Theism; Theology

For the best theists to-day the word God stands for the one ultimate personal ground of all existence, the source of the order and beauty of the universe, and of those ideals of truth, beauty, and goodness which have led man thus far upon his upward way.

Religion, says Schleiermacher, is the feeling of absolute dependence, the immediate consciousness of all that is finite as existing in and through the Infinite, of all that is temporal as existing in and through the Eternal. God is thus revealed in and through the experience of man, and, the higher and fuller the experience, the higher and fuller is the revelation attained. Christians believe that Christ is God's highest means of revelation, but not His only means. The knowledge of God is attained by many paths. Thus, though man is a religious being, and is almost always found believing in a God or gods, his conceptions of God vary greatly, and the highest conception reached has a long history behind it. No adequate definition of God can be given, since God by His very greatness can be but most imperfectly known.

The God of Israel

The Christian view of God is the result of a long process, which the Bible enables us to trace. The people of Israel, from whom Christ came, began with a conception of God differing little from that current in kindred tribes. They thought of their God at first as peculiar to themselves rather than

as the God of the universe, and they learned to know Him in their own national experience. His revelation of Himself had been in facts, rather than in words. He was a "living God," Who by wondrous means had lifted them out of slavery, brought them to their own land, protected them when they obeyed Him, and punished them when they disobeyed. But from very early days their conception of God was a moral conception as the conceptions of the tribes around them were not. God had shown Himself in their experience to be a God of truth, and righteousness and love (*cf.* Exodus xxiv., 6, 7), and He asked righteousness and love from them in their dealings one with another. In the best of the Hebrews it was God's character which was the primary fact about Him, rather than His power or knowledge. This moral conception of God was deepened and enlarged by the teaching of the long line of prophets in Israel's history.

This people, long before the coming of Christ, had learned that their God was "the God of the whole earth" (*cf.* Isaiah liv., 5), but the moral conception held its ground. It is still the character of God and the nature of His purpose which occupy the foreground in the consciousness of Christians. In the life and death of Christ for men, in all that He has done and is doing for them, the power and wisdom of God are clearly revealed, but His righteousness and love are revealed more clearly still.

The great words "God is love" are the summary expression of what God has been found in Christ to be. To this righteous love all other "attributes" of God are subordinate. His eternity and omnipresence are the eternity and omnipresence of love and holiness, His omnipotence and omniscience instruments which serve them. The vast additions made in modern days to our knowledge of nature and of history have indeed widened our conception of God's methods and purposes. Art has taught us to find a new revelation of Him in all sublimity and beauty; but the revelation of God's character and of the nature of His purpose stands where Christ has left it.

Authority and Acceptance

This conception of God comes to us at first, like other truth, upon the authority of others, but it needs to be verified by each man for himself by consideration of the experience on which it rests and by the effort to share it. The so-called "proofs" of God's existence are simply the ways in which He makes Himself known. Man's discovery of God and God's revelation of Himself to the individual and to the race are two sides of the same process.

But the need of seeking after God must be recognized. God's revelation does not force itself upon us. There must be the desire and the effort to know, and such a moral sympathy with the character of God as will render the revelation possible. So it is that Christ says "Blessed are the pure in heart; for they shall see God" (Matthew v, 8), and again "If any man willeth to do God's will, he shall know of the teaching, whether it be of God, or whether I speak from Myself" (John vii, 17). Belief in God has difficulties to overcome, and only those who are morally faithful to the light of conscience are likely to overcome them.

Why, firstly, do we find the ultimate ground of all that exists in a personal Being? The reason lies deep in our own nature. Man is conscious of himself as the cause of his own actions, and of the changes which they bring about in the world. Soon he becomes conscious of his fellow men, as acting with a will and purpose resembling his own. Thus, he inevitably explains the changes which he sees in the world by will and purpose, and, as he comes to recognize the unity of the world, by the will and purpose of the one God. No higher explanation is open to him, since personality is the highest fact he knows. At first he may regard God simply as a magnified man, but,

as he rises above this, he does not cease to believe that God is living and personal. Though the nature of God in its fullness must transcend our understanding, He cannot be lower in the scale of being than ourselves. Though He may be more than personal, He cannot be less. The world demands an explanation; and our minds can only rest in the thought of a Being with will and intelligence as the cause and ground of all that experience reveals to us.

Secondly, the world which we seek to explain is a world of order and of beauty, a world which everywhere exhibits the adaptation of means to ends, and in which each end when attained serves as a means to higher ends beyond. Though there may seem to be waste in nature and disorder in history, there can be no doubt that both nature and history are eloquent witnesses to God's wisdom and power, and in some degree to the benevolence of His purpose. But the world has issued in living beings, and in the case of man, in beings who recognize the difference between right and wrong, and the obligation, be the cost what it may, to choose the higher of the courses open to them. This again brings a revelation of God.

Though conscience, like reason, has been a gradual growth in close connexion with man's environment, a true explanation of the world must take account of it. Man himself is the "roof and crown of things," and no explanation of the world can be true which ignores the ideals which have made him what he has at his best come to be. A world in which beauty, truth, and goodness are felt to possess an infinite value is a world which must minister to a moral purpose, and the presence of our highest ideals must be our own sharing in the thought of God. It is this which assures us that, though God is the ground of all that exists, He must not be regarded as the author of evil.

The Problem of Evil

The problem of evil is the greatest difficulty which belief in God has to surmount, but the revelation of God which conscience brings shows us how to regard it. Evil is no part of the creation; it arises from the misuse of what is good by the freewill of man. The possibility of evil is a necessity, if good is to be freely chosen. A world in which evil choice was impossible would be a world without struggle or sacrifice; the existence of moral evil in the world, like the existence of pain, with which it is intimately connected, has a place to fill in the development of human souls, and

this is the highest purpose of God which we are able to trace. It is in conflict with evil that the righteousness and love characteristic of God are developed also in men. In all these ways, quite apart from the special revelation which the Bible records, God may be known by men who open their eyes to the light.

But though these paths of knowledge are open to all, they require a certain character for their appreciation. It is the man who himself acts with the most intelligent purpose who will appreciate best the intelligent purpose revealed in nature and in history, and the man most faithful to his ideals who will best see the character of God revealed in them. So it is that, though the best non-Christian philosophy has reached results very similar to the Christian view of God, its influence outside Christendom has been but slight. Just because the acceptance of moral evil has so largely blinded us, some higher revelation of God is required.

God and the Christ

The character of these new paths to knowledge has been already seen. They are not altogether different from the universal proofs, but rather the same proofs brought more closely home to us. The history of Israel and of the Church witnesses to God as all history witnesses to Him, but more clearly; the ideals of the prophets witness as all ideals witness, but more fully.

The wisdom and power of God shine out more clearly in Christ than anywhere else, and the character of God in a way absolutely unique, while sin and pain, the great hindrances to faith, though not fully explained, are illuminated by the Cross. God is seen taking them upon Himself, and making them the path to the highest good. Moreover, Christ, as no one else, has led men to seek after God, and enabled them to be sure that they have found Him. The crowning proof of God's existence and character is the multitude of those who have come to know God, and who trace to this knowledge all that is best in themselves and most fruitful in their life and activity.

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Godalming. Mun. bor. and market town of Surrey, England. It stands on the Wey, 35 m. S.W.



Godalming arms

of London on the L. & S.W.R. The chief buildings are the church of SS. Peter and Paul, the town hall, and market house; the church contains some Norman work. Near is a memorial to J. G. Phillips, the chief wireless operator on the Titanic; the town has also a technical and an art school. It has still some half-timbered houses of the 17th century. The borough council owns the waterworks and maintains an isolation hospital and a cemetery. The chief industries are tanning and paper-making; there is a trade in malt and corn. Stone is quarried in the neighbourhood. The place, which is mentioned in Domesday Book, became a borough in 1574. It was long a centre of the cloth manufacture. Pop. 8,850.

Near Godalming is the Charterhouse School. This was founded in London by Thomas Sutton, in 1611, his foundation being for a hospital and a free grammar school. In 1872 the school was removed to its present site, commodious buildings, in the Gothic style, being erected thereon. It consists of an under school and an upper school, the latter being divided into classical and modern sides. The buildings include chapel, laboratories, library, etc. There are nine houses with accommodation for about 600 boys, and scholarships to the school and the universities. See Charterhouse.

Godavari. River of S. India. 900 m. in length, it flows across the Deccan, from the W. Ghats to the Bay of Bengal. One of the most sacred rivers of India, it is a great resort of pilgrims. The chief tributaries are the Pranhita and the Manjira.

Godavari. District of India, on the N.E. coast of the Madras Presidency. It takes its name from the great river Godavari. Of the total area only one-third is cultivated; of the cultivated area more than half is devoted to rice. The exports mainly consist of agricultural produce, while the imports include cotton twist and yarn, and piece goods. The capital is Cocanada. Its area is 7,972 sq. m. \square .

Godrich. Town and port of Ontario, Canada. The county town of Huron co., it stands where the river Maitland falls into Lake Huron, 135 m. W. of Toronto. It is a terminus of the C.P. Rly., and



Godalming, Surrey. Buildings of Charterhouse School, which was moved from London in 1872

Frith

a station on the G.T. Rly. There is a fair harbour, from which steamers ply between various ports on the Great Lakes and the St. Lawrence. It has a number of manufactures, including salt works, some fishing, and is served by electric tramways. The plan of the town resembles a spider's web, and its buildings include churches, schools, grain elevators, etc. It is visited by pleasure seekers. Pop. 5,000.

Godetia (*Oenothera*). Section of the evening primrose genus. Of the natural order Onagraceae, they are natives of the warm parts of America. Evening primroses all have yellow flowers, and do not open in sunshine; but the godetias have white, rosy, or purple flowers which do. They are annual herbs.

Godfather. Sponsor for an infant presented for baptism, required as an assurance to the Church that the child will be brought up in the faith in which it is baptized. His duty is to answer the interrogatories put to him at the font, and afterwards to see that the child is instructed according to the promises made in his name and in due time brought to the bishop for confirmation.

The custom derives from the primitive church, when guarantors of the character of persons brought for baptism were an obviously necessary precaution. Parents were commonly the sponsors, as being the natural and proper guardians, and the 29th Canon, of 1604, forbidding their admission to the office, was only intended to provide additional security for the religious training of the infant. In the Anglican Church, three sponsors are required, two of them of the same sex as the child; in the Roman Catholic Church one suffices, but two are usually required. Godparents were formerly called *Gosips*, from God and sib, kindred, i.e. relations in God. Tertullian calls them *sponsores*, S. Augustine *fidejussores*, i.e. sureties. See Baptism.

Godfrey (c. 1061–1100). Count of Bouillon and crusading leader. The son of Eustace, count of Boulogne, he was made count of Bouillon and later duke of part of Lorraine by his master, the emperor Henry IV. In 1096 he offered himself for service as a crusader and was one of the leaders of the host that marched across Europe to

Constantinople to the Holy Land. In 1099 he had an honourable part in the successful siege of Jerusalem, and he was chosen its king, but refused the title, although he undertook the duties of ruler. He remained there, beating off attacks, especially when at Ascalon in 1099 he crushed the Saracens, and to some extent enlarging his authority until his death in July, 1100.

Godfrey's fame became legendary in the medieval romances; he was the hero of two notable French *chansons de geste*, and of an early legend which has close resemblances to that of Lohengrin (*q.v.*).

Godfrey, CHARLES (1790–1863). British musical conductor. Born at Kingston-on-Thames, Nov. 22, 1790, Godfrey entered the band of the Coldstream Guards as bassoon player, and from 1828–63 was bandmaster. He founded Jullien's Journal, the first English publication devoted to military music, was appointed musician in ordinary to the king, 1831, and died Dec. 12, 1863.

Several of his sons and grandsons followed the same calling. The eldest son, Daniel, or more commonly Dan, 1831–1903, was bandmaster of the Grenadier Guards, 1856–96, and then had a band of his own. He died June 30, 1903. Another son, Adolphus Frederick, 1837–82, succeeded his father as bandmaster of the Coldstream Guards for 17 years.

Charles, 1839–1919, the third son, was bandmaster of the Scots Fusilier Guards and then of the Royal Horse Guards from 1859–1904, and professor of military music at the Royal College of Music and the Guildhall School of Music.



Dan Godfrey, British bandmaster Downey

Godfrey, Sir Edmund Berry (1621-78). English politician. Member of a Kentish family and educated at



Sir Edmund Berry Godfrey, English politician
After Vanderbank

Westminster and Oxford, he became a wood-monger in London and justice of the peace for Westminster, and was knighted, 1666, for his services during the plague. Before him, Sept. 6, 1678, Titus Oates first swore the particulars of the notorious Popish "plot." On Oct. 12 Godfrey was missing, and five days later his body was found at Primrose Hill.

He was almost certainly murdered, perhaps at the instigation of Jesuits, but by whom has never been established. Three men were hanged on the evidence of an informer whose perjury was afterwards confessed and established, but investigations have failed to ascertain the facts about Godfrey's death. His name is sometimes erroneously given as Sir Edmund-bury Godfrey.

Godhra. Town and subdivision of Bombay, India, in the W. part of Panch Mahals dist. The area of the division is 585 sq. m. Godhra town has an important timber trade.

Godin, Jean Baptiste André (1817-88). French socialist. Born at Esqueheries, Jan. 26, 1817, he became an employee in the iron-works there. In 1840 he set up in business for himself, and made a considerable fortune. He introduced profit-sharing into his business, which, after it had been transferred to Guise, he turned into a cooperative association. He also erected dwellings, called familistères, for the workers, and in other ways showed himself a genuine believer in the socialist ideas he had learned from Fourier. Godin was a member of the National Assembly, 1871-76. He died Jan. 15, 1888. He wrote *Solutions Sociales* and other works on socialism and industrial problems. See *Co-Partnership*; consult also *Twenty-Eight Years of Co-Partnership* at Guise, A. Williams, 1908.

Godiva, Lady. Wife of the 11th century Leofric of Mercia. According to legend, Leofric made harsh exactions on his people of Coventry; consequently his wife begged for their removal, which he promised to grant if she rode naked through the town. Lady Godiva accepted the terms. The people of Coventry kept close within doors, their windows shuttered, during



Godiva. Lady Godiva as impersonated in the Coventry pageant of Aug. 7, 1907

the ride; all save a certain tailor, who, peering through a chink, was struck blind, and has ever since been known as Peeping Tom. The legend was commemorated at Coventry fair from 1678-1826 by a Godiva procession that has been revived intermittently in more recent years, and it is the subject of a well-known poem by Tennyson.

Godkin, Edwin Lawrence (1831-1902). Irish-American publicist. He was born at Moynock, Wicklow, Oct.



Edwin L. Godkin, Irish-American publicist

2, 1831, son of a Presbyterian clergyman who was also a journalist. Educated at Armagh, Silcoates, and Queen's College, Belfast, he studied law at Lincoln's Inn, was sub-editor of Cassell's Magazine, and wrote a *History of Hungary*, 1853. He served as Danubian and Crimean correspondent of *The Daily News*, in which paper, after he settled in the U.S.A. in 1856, he stoutly defended the cause of the North.

Godkin's most influential work was in connexion with the editorship of two New York papers, *The Nation* and *The Evening Post*, 1865-99. Despite uncertain health, he did probably more than any other man to inaugurate civil service reform, promote clean finance, and defeat Tammany.

In addition to the early work on Hungary, he wrote *Reflections and Comments*, 1895; *Problems of Modern Democracy*, 1896; and *Unforeseen Tendencies of Democ-*

racy, 1898. Oxford made him hon. D.C.L. in 1897. He died at Greenway, Devonshire, May 21, 1902, and was buried in the old churchyard at Hazelbeach, the inscription on his tombstone being by Viscount Bryce, who delivered the first of the Godkin memorial lectures on citizenship at Harvard, in 1904. See *Letters*, ed. R. Ogden, 2 vols., 1907.

Godlee, Sir Rickman John (b. 1849). British surgeon. Born April 14, 1849, he was the son of Rickman Godlee, a barrister, and through his mother a grandson of J. J. Lister, F.R.S., and a nephew of Lord Lister. Educated at University College, London, of which he was made a fellow, he began a surgical practice. Surgeon at University College Hospital, he was also professor of clinical surgery at University College. His other distinctions included the post of surgeon-in-ordinary to the king. In 1912 he was made a baronet. Godlee wrote a *Life of Lord Lister* and several books on surgery.

Godley, Sir Alexander John (b. 1867). British soldier. Born Feb. 4, 1867, the son of a soldier, he was educated at Haileybury and Sandhurst. In 1886 he joined the Dublin Fusiliers, and in 1896 saw active service with mounted in-



Sir A. J. Godley, British soldier
Russell

fantry in S. Africa. Having passed through the Staff College, he was in S. Africa when the war broke out in 1899, and after assisting in the defence of Mafeking, took command of a mounted brigade. From 1903-5 he was commandant of the school of mounted infantry at Aldershot.

Four years on the general staff at Aldershot followed, and in 1910 Godley was sent out to New Zealand as major-general to command the defence forces there. On the outbreak of the Great War he went to Egypt and Gallipoli at the head of a division of Australians and New Zealanders. After an arduous year on the peninsula he went to France, and was put in command of the 22nd corps, which he led in the closing stages of the war. He was in command of the New Zealand Expeditionary Force throughout the war. Military secretary to the secretary for war, 1920-22, he was commander of the British Rhine army, 1922-24, becoming in the latter year G.O.C. Southern Command.

Godmanchester. Mun. bor. and market town of Huntingdon. It stands on the Ouse, 1 m. from Huntingdon, and has a station on the G.N. and G.E. joint rly. The chief building is S. Mary's Church, a fine Perpendicular building, and here are some old timbered houses. It has a trade in agricultural produce, being noted for its milk and cheese; milling is another industry. Godmanchester occupies the site of a Roman and possibly a British station. It is mentioned in Domesday and was early a town of importance. Incorporated as a borough in 1605, it is now governed by a mayor and corporation. Its annual fair is still held. Market day, Wed. Pop. 2,130.

Godolphin, EARL. English title borne by the family of Godolphin from 1706 to 1766. The family was an old Cornish one, and its most prominent member, Sidney, was made an earl in 1706. His son Francis (1678-1766), lord privy seal 1735-40, was the 2nd and last earl. When Francis died the title became extinct, and the estates passed to his daughter, the wife of Thomas Osborne, 4th duke of Leeds. The duke of Leeds is thus the existing representative of the Godolphins.

Godolphin, SIDNEY GODOLPHIN, 1st EARL OF (1645-1712). English politician. Of good family, he came somehow to the notice of Charles II, to whose household he was attached during his exile. In 1660 he entered the House of Commons as M.P. for Helston, but it was not until 1679 that he became prominent in affairs of the state. Having by then made a certain reputation as a student of finance,

ated with Marlborough, led to his resignation in 1696. In 1700, however, he was again in office.



1st Earl of Godolphin,
English politician
After Kneller

these eight years he was mainly responsible for directing the country's affairs. In 1706 he was made an earl. He died, Sept. 15, 1712.

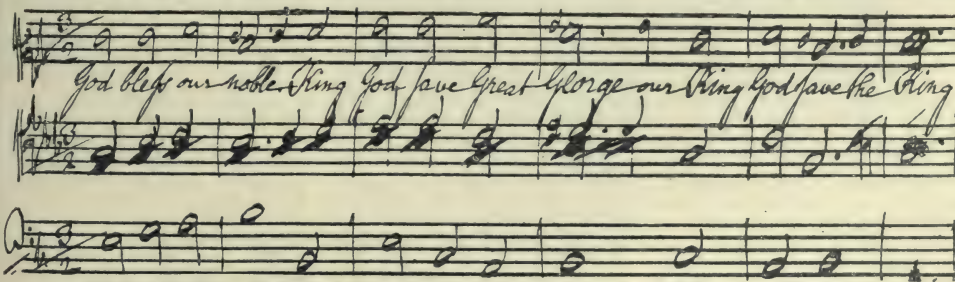
Godoy, MANUEL (1767-1851). Spanish statesman. Born at Badajoz, Feb. 12, 1767, Godoy became an official of the court, a royal favourite, and was made duke of Alcudia. From 1792-97 he was chief minister of Spain, being responsible for the declaration of war on France and the humiliating peace of Basel, 1795. He was again premier in 1801 and also general of the Spanish forces, which he led into Portugal, this time being in alliance with France. He was victorious, but the defeat of the Spanish fleet at Trafalgar added to the number of his public enemies, and he narrowly escaped death during an insurrection in 1808. His public career was over, and he lived in Rome and Paris almost forgotten until his death, Oct. 7, 1851. Godoy's Memoirs, dealing with the reign of his patron Charles IV, were published in English in 1836.

tender at Edinburgh. The story that it was sung as his own composition by Henry Carey at a public dinner in 1740 is now generally discredited. On the other hand, the statement that it was sung in Latin in James II's chapel in 1688, and preserved as a Jacobite hymn, has received the support of Dr. Cummings, who suggests that the words may have been sung to an adaptation of an air by Dr. John Bill (1562-1628), first Gresham professor of music, to whom the credit for the music has long been popularly assigned. See Galliard.

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Godthaab (Dan., Good Hope). Oldest settlement in, and chief town of, the southern inspecorate of Greenland. On the S.W. shore, on a bay in Davis Strait, in lat. 64° 10' N., it has a harbour, government offices, and a seminary for Eskimo catechists. The first Danish colony in Greenland, it was founded by Hans Egede in 1721. Pop. 1,000 (20 Danes).

Godwin or **GODWINE** (d. 1053). English earl. Little is known of him before the time of Canute, when he became one of the English earls. In 1020 he was earl of the West Saxons, and for fifteen years he appears to have been one of the Danish king's chief supporters. He forwarded the selection of Hardicanute as king in 1035, as in 1042 he did that of Edward the Con-



God Save the King. Facsimile of the opening bars in the original score used at Drury Lane Theatre, 1745

he became a member of the treasury board and one of the king's chief advisers, the little group being called the chits. In 1684 he was made a secretary of state, and a little later first lord of the treasury.

In 1690, after a brief absence, Godolphin returned to the treasury, but he was not loyal to William, and his secret intrigues with James II, in which he was associ-

God Save the King. British national anthem. The actual origin and authorship of the words and music have not been ascertained. The earliest extant version of both appeared in The Gentleman's Magazine, Oct., 1745, following upon the singing of the anthem at Drury Lane Theatre during the previous month as a loyal retort to the proclamation of the Pre-

fessor. His daughter was married to the latter king, and with his sons also in high positions, he was the most powerful man in the kingdom. In 1051, however, there was a serious quarrel between the earl and the king. The details are uncertain, but there was certainly two rival parties in the state, and the one opposed to the earl got, temporarily at least, the upper

hand, and Godwin and his sons were exiled. In 1053, however, he returned and was restored to his estates and dignities. He died April 15, 1053. Godwin, whose name is perpetuated in the Goodwin Sands, is regarded as the protagonist of the English against the growing influence of the Normans. Harold II was one of his sons; others were Sweyn, Tostig, Gurth, and Leofwine. See The Norman Conquest, E. A. Freeman, 1870-76. See Goodwin Sands.

Godwin, MARY (1759-97). English writer. Born at Hoxton, London, April 27, 1759, daughter of Edward



Mary Godwin,
English writer

After Opte

John Wallstonecraft, after living at Epping and Beverley, Yorkshire, where she received the principal part of her education, she left an uncongenial home in 1778, and became companion to a Mrs. Dawson, at Bath. In 1783, with a Miss Blood, she opened school at Islington, later removed to Newington Green. She was for a time governess in the family of Lord Kingsborough, and in 1787 decided to adopt a literary career. In 1786 the London publisher, Johnson, had given her 10gs. for a pamphlet entitled Thoughts on the Education of Daughters. She was assistant editor of The Analytical Review; translated Salzmann's Elements of Morality; in 1791 published her Answer to Burke's Reflections on the French Revolution; and in 1792 issued her Vindication of the Rights of Woman.

In Paris, where she witnessed the Terror and collected materials for her unfinished work on the Revolution, 1794, she met Gilbert Imlay, and bore him a daughter, Fanny, 1794, who committed suicide in 1816. She tried to drown herself from Putney Bridge as a result of Imlay's desertion; married William Godwin, March 29, 1797; and on Aug. 30 in the same year bore him a daughter, Mary, who became the second wife of the poet Shelley. She died Sept. 10, 1797. See her Letters to Imlay, new ed., ed. C. K. Paul, 1879; Memoirs, W. Godwin, 1798; Life, Mrs. E. R. Pennell, 1885; Study, E. Rauschenbusch-Clough, 1898.

Godwin, WILLIAM (1756-1836). English political writer and novelist. Born at Wisbech, Cambridgeshire, March 3, 1756, for some years he was a Dissenting minister. In 1785 he became a freethinker

and a republican, and in 1793 obtained considerable reputation by the publication of his Enquiry concerning Political Justice, a



William Godwin

After J. Northcote, R.A.

gospel of the purest anarchism. In 1794 he brought out The Adventures of Caleb Williams, a novel of extraordinary power, wherein he presented Falkland, the first of his self-torturing and unfortunate heroes. On these two books his fame is based, but he is probably best known as the father-in-law of Shelley. He died in London, April 7, 1836. See Shelley, Godwin and their Circle, H. N. Brailsford, 1913.

Godwin-Austen. Lofty mt. of Central Asia, the second highest known peak in the world (28,278 ft.). It is situated on the N.E. frontier of Kashmir, and is the culminating point of the Mustagh or Karakoram range. Designated on the Indian survey maps as "K 2," it was also called Dapsang, and in 1888 received its present name after Lt.-Col. H. H. Godwin-Austen, of the Trigonometrical Survey of India.

Godwit (*Limosa*). Genus of wading birds belonging to the snipe group. Two species, the bar-



Godwit. The black-tailed variety, *Limosa belgica*

tailed (*L. lapponica*) and the black-tailed (*L. belgica*) godwits, occur in Great Britain as birds of passage, though they appear to breed there no longer. They have long legs and beaks, the plumage barred with white and brown, and are usually found about shores and estuaries.

Goeben. German battle cruiser. Built at Hamburg in 1911, her length was 610 ft., beam 96 ft., and displacement 22,640 tons. Engines of 70,000 h.p. gave a speed of 28 knots per hour; her armour was a 10-in. belt, with 10 ins. on her conning tower and a 2½-in. protective deck. Guns were eight 14-in.,



Goeben. The German battle cruiser when she fell into British hands

twelve 6-in., twelve 12-pounders. A sister ship to the Moltke, the Goeben achieved much notoriety by her escape into Turkish waters, in company with the Breslau, Aug. 6, 1914,

When the Great War broke out the two ships were in the Aegean Sea. On Aug. 6, 1914, the British Mediterranean fleet got into touch with them off Messina and gave chase, but they escaped into the Dardanelles. A secret court-martial inquiry into the incident was held by the Admiralty, as a result of which the officer tried was acquitted. Later the Goeben became very active in the Dardanelles, and for some time led the Turkish fleet. On Jan. 20, 1918, in company with the Breslau, she made a dash from the Dardanelles and attacked the British ships off Mudros. As a result both enemy vessels were driven into minefields, where the Breslau sank and the Goeben sustained much injury. Whilst ashore in the Dardanelles the Goeben was bombed by British aircraft, but again escaped. Next she joined the enemy fleet in the Black Sea, and was there injured by running upon enemy mines. When the British fleet entered the Sea of Marmora, after the armistice, they found the Goeben lying crippled at Ismid and took her over.

GOES or TER GOES. Town of the island of S. Beveland, Netherlands, in the prov. of Zeeland. It is situated in the N. part of the island, of which it is the chief town, 20 m. W.N.W. of Bergen-op-Zoom. It has a lofty Gothic church, consecrated in 1423, and remnants of the chateau of Ostende, once the residence of the Countess Jaqueline of Bavaria. The town hall contains fine pictures by Flemish artists.

An important weekly fair is held at which the quaint costumes of the surrounding districts may be seen. Pop. 6,600.

Goethals, GEORGE WASHINGTON (b. 1858). American soldier and engineer. Born at Brooklyn and educated at the military academy of West Point, he specialised in military engineering, and did good service in that branch in the Spanish-American War of 1898. He was also employed on weir and harbour work. In 1907 Goethals was given charge of the construction of the Panama

Canal, a task demanding not only technical skill but high administrative qualities, which he fulfilled with admirable success, the canal being virtually completed some six months before the scheduled date of June 1, 1915. In Dec., 1917, he was appointed acting quartermaster-general.



G. W. Goethals,
American soldier

his discovery of a rudimentary inter-maxillary bone in man and his suggestive theory of plant-development from the basic leaf-form prepared the way for the Darwinian theory of evolution; while his studies in optics resulted in a new theory of colours. The last period of Goethe's life is comparatively uneventful. In 1788 he had found a congenial helpmate in Christiane Vulpius, who, although of all the women Goethe loved least to be regarded as his intellectual equal, inspired a lasting affection; in 1806 he made her his wife.

His principal works in this period were the first part of *Faust*, 1808; *Die Wahlverwandtschaften*, 1809, a psychological "problem" novel; *Der Westöstliche Divan*, 1819, a collection of poetry in an oriental mould which showed that, in spite of his years, his lyric powers were still undiminished; and *Wilhelm Meisters Wanderjahre*, 1821, a continuation of the earlier novel. In 1811 he commenced the publication of his autobiography, *Aus meinem Leben: Dichtung und Wahrheit*, which, however, was not carried beyond the year 1775, although other works, such as *Die Italienische Reise*, 1816, etc., may be regarded as a continuation.

In the very last year of his life he put the finishing touches to the second part of *Faust*, 1832. As his interest in this theme went back to the very beginnings of his literary life, and the kernel of the first part, the tragedy of *Faust* and *Gretchen*, was written in his pre-Weimar days, *Faust* may be said, in a very literal sense, to have accompanied Goethe all through life. He died at Weimar, March 22, 1832.

Goethe's Place in Literature

It is difficult in a brief summary to estimate Goethe's significance for his own literature and that of Europe. The most striking features in his life are the universality of his genius, the enormous range of his intellectual sympathies, and the sincerity and sanity of his judgement of men and things. He was not tempted into false paths by the materialistic tendencies of the age of rationalism into which he was born, nor did he lose himself in the maze of metaphysical subtleties of the romantic epoch.

His supreme achievement, it has been often said, was the life he lived; supreme, not on account of any exemplary morality, but rather because he saw all his experience in the light of a moral education, as so much material out of which he might build up, as he said, the pyramid of his life and personality.

GOETHE: HIS CAREER AND INFLUENCE

J. G. Robertson, Prof. of German Literature, London Univ.

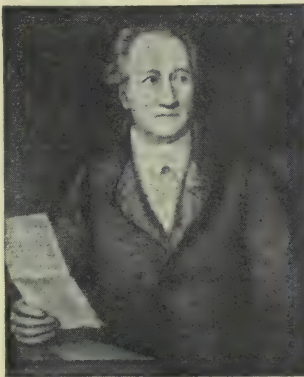
This article is supplemented by those on Germany: Literature; Drama; Poetry. See also the biographies of Heine; Schiller, and other German poets

Johann Wolfgang von Goethe, Germany's greatest poet, was born at Frankfort-on-Main, Aug. 28, 1749. Of good family, he received a liberal education at the hands of tutors, and studied law at the university of Leipzig and subsequently at Strasbourg. In the latter town, under the guidance of Herder, he learned to appreciate the beauties of Gothic architecture, the German Volkslied, and the greatness of Shakespeare; his genius was thereby awakened, and under the influence of his love for Friederike Brion, daughter of the pastor of a neighbouring Alsatian village, his lyric powers revealed their full strength. With Götz von Berlichingen, 1773, Goethe gave the new literary movement of Storm and Stress its first tragedy, and with *Werthers Leiden*, 1774, its typical novel. To this period also belongs the drama *Clavigo*, 1774, and other fragmentary works, including the earliest form of the drama of *Faust*.

Goethe and Weimar

Before settling down as an advocate in Frankfort, Goethe spent some months at Wetzlar, then the seat of the supreme German law courts. His plans for a career were, however, soon upset; at the end of 1775 he accepted an invitation to visit Karl August, duke of Saxe-Weimar, and Weimar remained his home for life. He won the duke's confidence, and before long was entrusted, as his minister, with the conduct of state affairs. These duties and the claims of social life interfered for a time with his literary work, and he published little; but under the inspiration of Charlotte von Stein, whose influence is immediately apparent in his lyrics, all the greater works of the next twenty years of his life were planned and begun.

The years 1786-88 Goethe spent in Italy, a stay which made a deep incision in his literary life; in the course of these years the dramas of *Iphigenie auf Tauris*, 1787, and *Egmont*, 1788, were completed, and *Torquato Tasso*, 1790, in great part written. On his return to Germany disappointment with home conditions for a time lamed his powers, and he produced little of importance; but in 1794 he came into personal contact with Schiller, and a mutually inspiring affection united the two men until the younger poet's death in 1805. In this period Goethe completed his



Goethe

After J. K. Stieler

greatest novel, *Wilhelm Meisters Lehrjahre*, 1795-96, and, in friendly rivalry with Schiller, wrote several of his finest ballads. In 1797 he published *Hermann und Dorothea*, the most perfect idyll in German literature.

Goethe also threw himself zealously into scientific pursuits. Here

His works he has himself called "fragments of a great confession," the "confession" of his own life; and this markedly subjective aspect lends them a unique interest.

But Goethe was also a great artist in poetry. It is true, his strength, unless where the lyric was concerned, did not lie in formal beauty; his dramas often overstep the limitations imposed by the theatre; his novels are lacking in proportion and sometimes tedious. But both his dramas and his novels show an almost Shakespearean power of characterisation, an insight into problems of spiritual development and emotional conflict, and contain an unrivalled wealth of wise reflection. As a lyric poet, Goethe stands alone in a literature the strength of which has in all times lain in its lyric. In the problems of philosophy, on the other hand, he took little interest; as a political thinker, he lived in too distraught an age to understand fully the questions either of his own time or of the future; as a scientist, his achievements have no present-day value. But his attitude to the problem of the conduct of life is still "modern." Goethe's life covered the most important period in the development of his country's literature, and he is its greatest personality.

Round few men of letters has so vast a literature grown up. The standard edition of his works is the Weimar edition in 142 vols. (1887-1920), which includes, besides the Works proper, his Diaries and Letters. His Conversations have been edited by F. von Biedermann (2nd ed., 4 vols., Berlin, 1908-9). All Goethe's more important works have been translated into English, Faust many times. England has also the honour of having produced the first adequate biography of Goethe, that by G. H. Lewes, 1855, a book which still retains its value and popularity. Of modern German biographies, that by A. Biel-

schowsky, 1896-1904, is generally regarded as the most satisfactory; Eng. trans. by W. A. Cooper, 1905-8. Of the vast critical literature, it is difficult to make any selection; but the publications of the German Goethe-Gesellschaft (since 1880) may be specially mentioned.



Goethe. The poet's birthplace at Frankfurt, now a museum. Top, right, the house in Weimar where he died (from an old print)

Bibliography. A complete bibliography will be found in vol. iv of Goedeke's *Grundriss zur Geschichte der deutschen Dichtung*, 3rd ed., Dresden, 1910. Amongst English literature on Goethe mention may be made of—besides Lewes's *Life of Goethe*, J. Sime, 1888; Goethe reviewed after Sixty Years, J. R. Seeley, 1894; Goethe and the Twentieth Century, J. G. Robertson, 1912; *The Life of Goethe*, P. Hume Brown, London, 1920.

Goethite. Mineral containing nearly 81 p.c. of iron. It crystallises in column or needle-like shapes in the rhombic system, and is found in Cornwall, Saxony, Lake Onega (Russia), and Jackson Iron Mountain (U.S.A.).

Gog and Magog. Two names in Biblical and post-Biblical literature. In Ezek. xxxviii, 2, God is spoken of as opposing "Gog, of the land of Magog, the prince of Rosh, Meshech and Tubal"; and in xxxix a battle on the mountains of Israel is predicted in which Gog is overthrown. In the Mishnah, Gog and Magog appear as the worldly leaders of a furious assault upon the Kingdom of God. The name Gog was perhaps suggested by the Gyges of Herodotus and the Gugu of Assyrian inscriptions.

Gog and Magog are the names given to two huge carved figures which stand on octagonal pedestals at each angle of the wall at the west end of Guildhall, in the City of London. Figures of this character, but made of wickerwork and pasteboard, were at one time carried in the annual mayoral procession. According to tradition they represent Gogmagog and Corineus, who, in medieval monastic chronicles, fought the battles of the Trojan invaders against the early inhabitants of Britain. In time Corineus was forgotten and the name of his companion divided between the two. With this myth is associated the tradition that the city was founded by the invaders and that London, as Troynovaunt, or New Troy, was the chief city of Albion 1,000 years before the Christian era.

Each figure is 14 ft. 6 ins. high. They were carved, 1708, by Richard Saunders, who was paid £70 for the work. Similar figures on a smaller scale strike the hours on Bennett's clock in Cheapside.

Gogh, VINCENT VAN (1853-90). Dutch painter. Born at Zundert, Holland, he was the son of a Protestant minister. He was at first profoundly influenced by the work of



Gog and Magog, the wooden figures, carved in 1708, in Guildhall, London
London Stereoscopic Co.

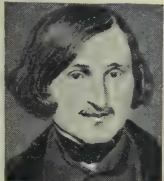
Millet, was drawn later to the Impressionists, and then became one of the three leaders of the Post-Impressionist group, being associated with Cézanne and Gauguin. Van Gogh's art aimed at expressing that aspect of a subject which most strongly appealed to his senses.

Towards the end of his life a sun-stroke affected his brain, already not very strong, and after spending some time in an asylum at Arles, he died by his own hand at Anvers-sur-Oise. More than half of his pictures, including several of his best, were painted at Arles during the three years of detention.

Gogmagog Hills. Range of hills in Cambridgeshire. They lie to the S.E. of Cambridge, and are a continuation of the chalk formation which runs up from the Chilterns. Their highest points are only about 220 ft. above sea level, but owing to the flatness of the country round, extensive views are obtained from them. There are traces of Roman earthworks.

Gogo. Seaport of Bombay, India, in the district of Ahmabad. It stands on the W. shore of the Gulf of Cambay, 190 m. N.W. of Bombay. Formerly of some importance, it has lost its commercial prosperity. On the N. and S. of the town there are salt marshes. Pop. about 6,000.

Gogol, NIKOLAI VASSILIEVITCH (1809-52). Russian novelist and dramatist. Born at Sorochintsi, Poltava, March 31, 1809, and educated at Nyejin, he went to St. Petersburg in 1828, and for a time was a clerk in a government office.



Nikolai V. Gogol,
Russian novelist

After a period of indecision and unrest, he published anonymously *Evenings at a Farmhouse near Dikanka*, 1831, a series of stories of that Little Russia in which his early life had been spent. For a short time he was professor of history at St. Petersburg.

In 1834 *Mirgorod*, another volume of stories, established his fame; it contained *Taras Bulba*, a romance of the Cossacks, which was rewritten in 1842 and, since widely translated, founded the Russian novel. In 1836 his comedy *Revizor* was produced, its satire on the conditions of the Russian life passing unnoticed in general appreciation of its humour. It was given by the Incorporated Stage Society at the Scala Theatre, London, June, 1906. In April, 1920, under the name, *The*

Government Inspector, the comedy was produced at the Duke of York's Theatre. From 1836-46 the author lived abroad, mostly in Rome. In 1842 he published the first volume of *Dead Souls*, presenting Russian provincial life in a clear and brilliant manner, and with a rare humour. The second volume was burnt by the author, and only collected scraps have been produced. In his later years Gogol became intensely religious, and died at Moscow, worn out, it is said, by prayer and fasting, March 3, 1852.

Bibliography. *The Great Masters of Russian Literature in the Nineteenth Century*, Ernest Dupuy, Eng. trans. N. H. Dole, 1886; *Nicolas Gogol: écrivain et moraliste*, R. Tyneva, 1901; *Landmarks in Russian Literature*, M. Baring, 2nd ed. 1910; *Nicolas Gogol*, Louis Leger, 1914 (in *Les Grands Écrivains étrangers*).

Gogra. River of India. With its source in Tibet, it is the great river of Oudh, United Provinces. After passing Azamgarh, Ghazipur and Ballia, it joins the Ganges. It exceeds 500 m. in length, is venerated by the Hindus, and is a useful waterway.

Goidels. Earlier branch of the Celtic-speaking peoples, who carried to Britain the Goidelic or C. Celtic speech. This developed into the Irish and Scottish Gaelic and the Manx dialects. The term, introduced by John Rhys in 1882, displaced the earlier Gadhelic or Gaelic. The Goidels either preceded or accompanied the bronze-age culture, with the practice of cremation. Round-headed Alpines, they mingled with the short, swarthy, long-headed pre-Aryan population. After at least six centuries this mixed race was confronted by the Brythonic invasion, whose late-Celtic speech and iron-age culture gradually penetrated westward. *See* Brython; Celt.

Goil. Sea-loch of Argyllshire, Scotland. It forms a W. arm of Loch Long, and extends for 6 m. N.W. of Lochgoilhead. There are mountains on either side.

Goito. Town of Italy, in the prov. of Mantua. It stands on the Mincio, 11 m. from Mantua. It is chiefly notable for the battle fought here on May 30, 1848, when Charles Albert, king of Sardinia, defeated the Austrians. Pop. 6,700.

Goitre (Fr. *goître*, Lat. *guttur*, throat). Enlargement of the thyroid gland, situated in the lower part of the front of the neck. Two chief forms are recognized, simple goitre and exophthalmic goitre (*q.v.*). Simple goitre, also known as bronchocele and Derbyshire neck, occurs most fre-

quently in hilly regions, in Derbyshire and Gloucestershire in England, and abroad in Switzerland, Northern Italy and Central Asia. It is usually sporadic, but sometimes occurs in the form of an acute epidemic. The disease is probably due to the presence of an organism in drinking water.

The condition may last for years without producing serious symptoms, but the gradual enlargement may ultimately compress the air passages and cause difficulty in breathing. Medical treatment is not of much avail, but the administration of thyroid extract may be tried. In the early stages a change of locality sometimes brings about a cure. With steady persistence or increase of the growth a surgical operation for removal of part of the goitre is generally advisable. *Pron.* goy-ter.

Gokhale, GOPAL KRISHNA (1867-1915). Indian political leader. Elected to the Bombay legislative council in 1900, he was selected in



Gopal Gokhale,
Indian politician

Elliott & Fry

1902 by the non-official members of that body to represent them on the Supreme Council. He became leader of the Indian opposition, although manifesting consistent loyalty,

which was recognized by the conferring on him in 1904 of the C.I.E. In 1905 he founded the Servants of India Society for the training of "national missionaries." He worked hard on behalf of a movement for the compulsory free education of boys. Gokhale was one of the leading exponents of the policy of self-government for India within the Empire. He drew up a remarkable memorandum on the subject only a few days before his death, outlining his proposals for the future government of India. He died at Bombay, Feb. 20, 1915. *See* India.

Goktcha or SEVANG. Lake of Armenia. It lies at an alt. of over 6,000 ft., 30 m. E.N.E. of Erivan, in a deep basin surrounded by rugged mts. It is about 47 m. long, with an average breadth of 12 m., and provides good fishing.

Golborne. Urban dist. and parish of Lancashire, England. It is 5½ m. S. by E. of Wigan, on the L. & N.W.R. The chief industry is the cotton manufacture, while around are coal mines. Water is supplied by the Ince urban district, which has works in Golborne. Market day, Sat. Pop. 6,930.

Golcar. Urban district of Yorkshire (W.R.). It is 3 m. S.W. of Huddersfield, and has a station on the L. & N.W.R. A centre of the woollen manufacture, here is a mineral spring. Pop. 10,100.

Golconda. Fortress belonging to the nizam of Hyderabad. Situated about 7 m. W. of Hyderabad, Golconda, now a ruined city, was the capital of a kingdom that flourished from its establishment in

1512 until its conquest and annexation by Aurangzebe in 1687. Huge mausoleums of the former kings, fast falling into decay, surround and dominate the fort, which is used by the nizam as a treasury and prison. From the fact that the diamonds brought from the rich fields at the base of the Nila Hulla mts. were cut and sold at Golconda, the name of the city has come to be associated with fabulous wealth.

GOLD: THE METAL AND ITS USES

A. J. Liversedge, Consulting Engineer, and A. W. Holland

This article deals with the history of gold and describes briefly the areas and geological forms in which it has been found. In conclusion, the importance of the metal in commerce and finance is considered. See Mining and the articles associated therewith, e.g. Assaying; Bumping Table; Cyanide, etc. See also Geology; Jewellery; Metallurgy, etc.

Gold was almost certainly the first metal to be used by man. He would find it, as it is still often found, among the sands of rivers in the form of small grains, and sometimes in pieces as large as a hen's egg; its colour and lustre would attract him while still uncivilized, at a very early stage in his intellectual development. For ages he used it only for personal adornment, making it into necklets and anklets by tying the grains together with pieces of fine animal fibres. Later he found the means of working the metal into various forms, and then of melting and casting it in moulds. Even worked flints of the stone age, knives, or the equivalents of knives, of those days, are found partly covered with a sheath of thin gold, on which the primitive artist and engraver has cut figures of women, animals, twisted snakes, boats, etc.

The progress of the civilization of ancient Egypt is marked and punctuated by remarkable examples of gold jewellery, from the beautiful spiral shells of the first dynasty, 5500 B.C., to the chains and statuettes and the gilded work of the time of Cleopatra and the Romans. There are many references to gold in the O.T., some of them indicating an advanced state of knowledge of the art of working the metal, e.g. the statement that the Jews "did beat the gold into thin plates and cut it into wires." (Exod. xxxix, 3.)

The extraction of gold from the earth appears to have been carried on from the earliest historical times as diligently and systematically as to-day. The great conquerors carried off the gold from the regions which they traversed; while gold was one of the forms in which tribute was paid to them. The accumulation of gold which King David made for the building of the temple

is estimated to have amounted to some £900,000,000. The amount of gold extracted from the earth since 1493, the discovery of America and the earliest date at which anything like a reliable estimate can be made, until 1917, is believed to have been about 823,500,000 oz., valued at £3,346,332,000 sterling. The world's stock at the present time is estimated at about £1,766,820,000 sterling.

Gold is an elementary metal, chemical symbol Au (Lat. *aurum*); atomic weight 196.2, specific gravity 19.32, melting point 1,061° C. (1,941.8° F.); colour, when pure, bright yellow, slightly reddish, with high metallic lustre; takes a brilliant polish; in hardness nearly as soft as lead, but differs from the latter in its extraordinary malleability and ductility, in which it surpasses any other metal. It may be hammered out into leaves so thin that 300,000 laid one upon the other would not be more than one inch in height; a single grain in weight may be spread by hammering over 56.5 sq. ins. of surface, or drawn into a piece of wire 500 ft. in length.

Chemical Characteristics

The French scientist Réaumur, by gilding with gold a silver wire and then drawing down the wire, reduced the thickness of the gold covering to 1/12,000,000 in., the surface still appearing perfect when examined under the microscope.

In tensile strength gold comes after iron, platinum, silver, and copper. It does not combine directly with oxygen, even when in a molten state in an open vessel, is unaffected by air or moisture at any temperature, and resists all the mineral acids except selenic, which only acts upon it with the aid of heat; the alkalis have no effect upon it at normal temperatures. It dissolves, however, in aqua regia, a mixture of nitric and hy-

drochloric acids; it is also dissolved by chlorine. Its conductivity for heat is only half that of silver and much less than that of copper, while its conductivity for electricity is also less than that of the two latter metals.

It is not volatile at any such temperatures as those which occur in the blast furnace, but before the oxy-hydrogen blow-pipe or in the electric arc it may be vaporised. Gold forms two oxides, the monoxide and the trioxide or auric oxide, the latter being readily obtained by evaporating a solution of the metal in aqua regia when the crystals are yielded. The salt is very deliquescent, and is used in photography. By precipitating gold chloride with ammonia or its carbonate, fulminating gold is formed, a greenish brown powder readily exploded when dry; by combination of tin chlorides with gold chloride the Purple of Cassius is produced, a flocculent powder used as a pigment in preparing ruby-coloured glass.

Its Native State

Gold is found in nearly all parts of the earth, and, with the exception of aluminium and iron, is more generally distributed than any other metal. It is mostly, however, in such minute proportions as to escape recognition unless special steps are taken to ascertain its presence. It is also found in the sea. It chiefly occurs native in the crust of the earth, i.e. in the state of metal, occasionally pure, but more generally alloyed with silver, sometimes with copper, and occasionally with palladium, rhodium, and other metals.

The purest native gold yet found is obtained in Australia, and contains 99.65 p.c. of the metal; Russian mines at Ekaterinburg have yielded specimens showing 98.96 p.c. On the other hand, mines in New Granada, S. America, have furnished ore carrying only 64.93 p.c. of gold but 35.07 p.c. of silver. Traces of iron are frequently present. It is occasionally found in the form of crystals, but more generally in grains, thin laminae and masses, sometimes in fibres or network. Apart from its occurrence in the native condition it is also found, but comparatively rarely, combined with tellurium and lead in nagyagite, in Hungary; with tellurium and silver in sylvanite, and as an amalgam.

The original position of gold in the crust of the earth as at present constituted is chiefly in the quartz veins which occur in the altered palaeozoic rocks, the sedimentary formations of the Silurian, Devonian, and Carboniferous periods,

more particularly the first, where they have been changed by contact with irruptive igneous rocks. The fissures formed in these sedimentary rocks by the eruptive forces to which they were exposed were subsequently filled by deposits of quartz which probably carried the gold with it where it is now found concentrated.

Sometimes, however, gold is also found diffused through the masses of these rocks, both the sedimentary and the igneous. Occasionally it appears in granite, but the great supplies of the world have been derived immediately or remotely from the quartz veins of the altered rocks, chiefly of the Lower Silurian period, though it has been pointed out that the great Californian gold-bearing deposits are as recent as the Jurassic age. The gold-bearing formations of the Witwatersrand present peculiar features; they consist of beds of sandstone, quartzite, conglomerates, and frequently shales. The gold occurs in the beds of conglomerate, locally described as "banket," which consist of masses of waterworn quartz pebbles cemented together by quartz sand, clayey and talcose matter, and oxide of iron; but it is found, not in the quartz pebbles, but in the cementing material.

Sources of Supply

The veins of gold-bearing quartz in normal formations vary in thickness from that of a sheet of writing-paper to several feet, and may extend for a few yards or for many miles. Generally the thinner veins are richer than the thicker ones. The veins may be superficial or descend to great depths. Mines in S. Africa are now being worked at nearly 2,000 ft. below the surface, while the famous Morro Velho mine of Brazil has reached a depth of over 5,000 ft.

The gold of commerce is to-day obtained from three sources: (1) alluvial deposits, (2) quartz rock, and (3) telluride ores, the great bulk from the first two, and mostly from the second. The alluvial deposits are in the beds and banks of existing or of ancient streams or rivers or their estuaries, the gold being found in sands and gravels. These deposits are undoubtedly derived from quartz rock formations which in the remote past have been exposed and broken up by atmospheric agencies, by earth movements or volcanic action, and their contents carried by water or glaciers into their present situations, which may, however, be high above existing rivers, and running in quite different directions. These

deposits may be superficial, but in some regions they are of great depths, e.g. in the "deep placer" mines of California, where the deposits attain a depth or thickness of 500 ft.

Australian Gold Fields

Found in nearly all parts of the world, these deposits were the sources whence primitive man obtained his gold, and whence came most of the precious metal accumulated by the ancient civilizations. Many streams of the north of Scotland and of Ireland have furnished such deposits from which appreciable amounts of gold have been obtained in the past. Indeed, in streams and rivers all over the world traces of gold may at any time be found. The opening up of the great gold-producing regions of the world has nearly always been begun by discoveries, usually accidental, of rich deposits of this class. Thus the gold industry of Australia really dates from 1851, when E. H. Hargreaves announced his discovery of gold at Summer Hill Creek and other places near Bathurst, about 150 m. from Sydney, New South Wales, although the existence of gold in Australia had been known for some years. The gold presents itself in these placer or alluvial workings mostly in very fine grains, "dust" practically, but from time to time nuggets weighing from 8 oz. or 10 oz. upwards are found. The largest known nugget ever found was the "Welcome Stranger," 21 ins. long and 10 ins. thick, and weighing 2,520 oz., the melted gold amounting to 2,268 oz. 10 dwt. 14 grs.

The precious metal is usually evenly distributed throughout considerable masses of these alluvial deposits, but occasionally is found in remarkable concentrations. From a few sq. ft. of such a deposit a value exceeding £10,000 has been recovered in many instances. Gold is still extracted from such placers by individuals working on their own account by simple washing by means of the primitive appliances of the old-time miner—the pan, the cradle, the batea, and the tom (*q.v.*)—but this is mostly in remote regions or where Chinese or other cheap labour can find a sufficient return for its industry in very poor deposits.

The great bulk of the gold from alluvial deposits is now obtained by much more elaborate machinery, particularly dredging, excavating, and hydraulicking. Dredging is now practised on a large scale on some of the rivers of N. and S. America, Africa, Australia, and the Far East. The ma-

chines used are identical in all essentials with the dredgers used in harbours for removing or preventing accumulations of sand or mud likely to incommode navigation. (*See Dredger.*) The mouths of the rivers and other parts where the velocity of the water is reduced are selected as the grounds most likely to prove profitable, as the gold brought down by the river will settle at such parts.

Where the deposits are not in the beds or on the banks of existing rivers, but in those of ancient rivers, arrangements are sometimes made to bring water to the site in sufficient quantity to float a dredger and carry off its spoil. The "pay-dirt" recovered by dredgers must be subjected to treatment for the extraction of the gold. This treatment begins with a rough and ready concentration, which consists in simply washing away some of the worthless mud by streams of water, followed by amalgamation, chlorination, or cyaniding, or a combination of the first and third of these processes.

Hydraulic Mining

The most remarkable method of recovering gold from the elevated placer deposits is that of hydraulic mining or hydraulicking. The illustration shows the operation of this system; *a* is the hydraulic main by which the water is brought down from some elevated source, which may be 500 ft. above the site shown; *b* is a distributing box provided with valves by which the water is served to *c*, *c'*, *c''*, which are nozzles through which the water is directed on to the rock.

These nozzles are called "monitors," and are constructed to swivel through a certain arc so as to command a considerable section of the deposit face; *e*, *e'*, *e''* are channels which carry off the water with the material washed out (more generally a tunnel takes the place of these open channels); *f*, *f'* is the sluice stream, having at intervals drops, as at *g*, the object of which is to break up boulders, and at some point a grizzly, *h*, a grill of iron bars so placed that stones above a certain size cannot pass it, but are rolled over the top and discharged into a dump down the side of the hill.

At *j* is an undercurrent, the idea of which is to take a certain amount of the water in the sluice above from a point below its surface where it may be supposed some proportion of gold is being carried along, and to spread this water out over a large area, thus reducing its velocity and permitting the rich dirt to settle before the water again rejoins the main



Gold. Diagram illustrating the hydraulic method of recovering gold from elevated placer deposits. See text

stream. At various points in the main stream sluice boxes are constructed which are supplied with mercury by which the gold is caught and retained.

Most of the gold of the world is now obtained by deep mining from quartz rock. The process of extraction after the ore has been brought to the surface comprises crushing, which may be divided into two or even more stages—amalgamation, chlorination, or cyaniding. Chlorination is, however, almost abandoned, cyaniding having taken its place.

Amalgamation generally begins in the stamp mill mortar itself, where a certain amount of mercury is introduced, or where amalgamated plates are disposed so as to catch some of the gold as it is liberated from its matrix; but is mostly carried out on tables placed below the discharge from the stamps down which the crushed ore is carried by the water served to the stamps. The whole of the gold is not recovered at this stage, and the "tailings" are submitted to a process of concentration for which many different kinds of apparatus have been devised.

The gold recovered by these operations thus appears in two forms, an amalgam and a precipitate, commonly called "slimes," which is collected from the boxes in which the metal has been thrown down by zinc shavings from the cyanide solution. From the amalgam the gold is obtained by distilling off the mercury in cast-iron retorts, and the bullion resulting, about 35 to 40 p.c. of the amalgam, is melted in plumbago crucibles and cast into bars.

This bullion is not pure gold, but, in addition to an appreciable amount of silver, contains traces of copper, iron, and lead.

pyretic, i.e. contains sulphur in combination with iron or other metals, the ore must first be roasted to remove the sulphur.

This general process has in many districts, particularly in the U.S.A., been considerably modified during recent years; the tendency having been to substitute other appliances—ball and tube mills and disintegrators—for stamps, to cut out amalgamation more or less, and to utilise continuous methods of cyaniding, supplemented by filtering by means of vacuum filters.

The world's output of fine gold in 1917 was worth £87,983,000. The chief sources of supply were:

Transvaal ..	£38,324,000
United States ..	17,344,000
Australasia ..	7,401,000
Rhodesia ..	3,495,000
Canada ..	3,175,000
India ..	2,214,000
West Africa ..	1,530,000

The greater portion of the gold produced annually is consumed in the arts, in the preparation of jewelry, plate, and for gilding chiefly; about one-fourth is coined in normal times, while an appreciable amount is required to make good the wear and tear of gold coin.

A. J. Liversedge

Early in the 19th century gold began to play an important part in commerce and finance. It was used by the Egyptians and other early peoples to some slight extent as coinage, but much more of it passed into the hands of kings and other rulers, and was either hoarded or employed in display. There was a great mass of gold in existence while the Roman Empire flourished, but then and also during the Middle Ages it had no great influence on prices or exchanges.

The modern world has seen gold supplant silver as the chief medium of exchange, at least in western countries. The process began in

England in the 18th century, and in 1816 the gold standard was definitely adopted. A fixed value was given to the sovereign, and through it to the ounce of gold, which for 100 years sold at about 85s. an ounce. On this foundation the monetary and then the credit systems were built. Silver and copper coins were regarded as so many to the £. Great discoveries of gold in Australia and elsewhere later in the century gave an impetus to the adoption of a gold standard of coinage in other countries, and soon, not only France and other European countries, but the U.S.A. and many American ones had set up a gold standard. Silver, too, was discovered in large quantities, this led to a fall in its price, and so to the agitation for a double standard, or bimetalism.

With a definite gold standard and with large reserves of gold in the various state and other banks, it was possible to build up a credit system which was intrinsically sound, and without which it is hard to see how trade could have developed as it did in the 18th century. The 19th century saw an enormous development in the use of instruments of credit, cheques, bills of exchange and the like, and with it all there was the knowledge that, if desired, gold could be obtained for them. Bank notes, too, had a definite backing of gold, while American enterprises were largely financed by bonds, which were payable in gold. This increased use of gold was not without its effect on prices, but the relation between these is a matter of controversy among economists.

The position of gold was entirely changed by the events of the Great War. Paper money was created on an immense scale, and over the greater part of Europe gold, as a circulating medium, disappeared. Large stocks were accumulated by the various governments, but these were nothing like sufficient to cover the great amount of paper money put into circulation. The old gold standard virtually disappeared, this being not without its effect on the great rise in prices that took place in 1918-20. See Bimetalism; Coinage; Credit; Prices.

A. W. Holland

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Gold and Silver Wyre Drawers' Company, THE. London city livery company. Incorporated in 1693, it is first mentioned in 1461. Offices, 9, Laurence Pountney Hill, E.C. See History of the . . .



Gold and Silver Wyre Drawers' Company arms

Gold and Silver Wyre Drawers, H. Stewart, 1891.

Goldau. Village of Switzerland, in the canton of Schwyz. Situated between the lakes of Zug and Loewerz, 6 m. W.N.W. of Schwyz, on the St. Gotthard Rly. (Arth-Goldau station), it is a junction for Zug and Einsiedeln-Wädenswil, and the starting point of the Arth-Rigi Rly. On Sept. 2, 1806, the former village of this name at the base of the Rossberg, with three other villages, was destroyed by a landslip, the track of which can be seen from the railway. Pop. 500.

Goldbeating. Process of hammering pieces of gold into extremely thin leaves, known as gold leaf. To separate the leaves a preparation from the peritoneum of the ox, called goldbeaters' skin, is used. This is also used for the treatment of slight cuts or wounds, and during the Great War was employed to line the gasbags of airships. See Gold Leaf.

Gold Coast. British colony of W. Africa, situated between French Togoland and the French colony of the Ivory Coast.



Gold Coast arms

With Ashanti (q.v.) and the protected Northern Territories it forms a compact country stretching from the Gulf of Guinea to the

French Sudan, a distance of 480 m. from N. to S. Along the coast it measures 334 m. The area of the colony proper is 24,200 sq. m., that of Ashanti is 20,000 sq. m., and that of the Northern Territories is 35,800 sq. m., or a total of 80,000 sq. m. The colony is divided into three provinces: Western, Central, and Eastern. From the lagoons of the coastal regions the country rises gradually towards the interior, being crossed by numerous small streams and by one large river, the Volta. The country is inhabited by a large number of tribes, governed by their chiefs, and each more or less independent of the others.

The river-deposits of gold, from which the Gold Coast derived its name, were worked by the natives prior to the advent of the Portuguese

and French navigators in the 14th century. The first European settlement was made in 1482, when Fort San Jorge de Mina (Elmina) was built by the Portuguese. Subsequently other nations, notably the Dutch, established themselves on the coast, building castles and forts, several of which still remain. English expeditions visited the Gold Coast long before the formation of the "Company of Adventurers of London trading into Africa," in 1618, but it was not until that year that English traders obtained a definite footing. Among those who established settlements were the Brandenburgers, who for a time (1682-1720) maintained their position in the country.

The subsequent history of the country until the English forts were definitely occupied by the British Government in 1843 is largely the



Gold Coast. Map of the British colony in West Africa, on the Gulf of Guinea

history of various trading companies, such as the Royal African Company (1672), the African Company of Merchants, and other private trading corporations. In 1850 the British Government purchased the forts belonging to the Danes, and in 1871 the Dutch also transferred their possessions. In 1874 the Gold Coast became a separate colony.

The climate of the Gold Coast, though hot and damp, is not in itself unhealthy; great improvements in sanitation having taken place during recent years. The chief products are palm oil, palm kernels, rubber, cocoa, kola nuts, lumber, and gold. The cocoa industry in particular has made great progress during recent years. There is a rly. from Sekondee, through Tarquah, to Kumasi, with a branch to Prestea; and another line from Accra, the capital, to Tafo. The chief gold mines are in the Prestea and Tarquah districts. The chief ports in

order of importance are Sekondee (Sekondi), Accra, Addah, Winnebah, Saltpond, Cape Coast, and Axim. The pop. of the colony is 853,766 (including 2,203 Europeans), that of Ashanti is 287,814, and that of the Northern Territories is 361,800.

Bibliography. History of the Gold Coast, A. B. Ellis, 1893; History of the Gold Coast, C. C. Reindorf, 1895; Alone in West Africa, Mary Gaunt, 1912; History of the Gold Coast and Ashanti, W. W. Claridge, 2 vols., 1915.

Golden Age. In classical mythology, the period when Saturn or Cronos, after being dethroned by Zeus, reigned in Latium as king. Saturn taught agriculture and the arts of civilization to his people, and the period of his reign, being one of peace, happiness, and prosperity, came to be known as the Golden Age.

Golden Ass, THE. Name by which The Metamorphoses of Lucius Apuleius is generally known. An allegorical fable in 11 books, much of it is a paraphrase of The Ass of Lucian, which was originally derived from a work of Lucius of Patrae, a Platonist who flourished in the reign of Marcus Aurelius. See Apuleius, Lucius.

Golden Bough, THE. General title for a series of studies in magic and religion by Sir J. G. Frazer (q.v.), first publ. in 2 vols., 1890. In its revised and much expanded edition (12 vols., 1907-15), the work consists of seven parts: The Magic Art; Taboo; The Dying God; Adonis, Attis, Osiris; Spirits of the Corn and of the Wild; The Scapegoat; and Balder the Beautiful. The 12th volume is a bibliography and index. The work deals with the history of supernatural beliefs and symbolic rituals, and was inspired by a wish to inquire into the legend of the golden bough utilised by Virgil.

This legend is identified with the mistletoe, which, growing on the oak, represents the external soul of a living sun-god represented by the tree. The Norse myth of Balder (q.v.) had its counterpart in Italy in the *rex Nemorensis*, the priest of Diana in the grove by Lake Nemi, near Aricia. Balder and the priest both personified the oak-spirit, whose life or death was in the mistletoe and who could not be slain so long as that remained intact. The priesthood was gained by one plucking the golden bough and slaying the armed priest in combat, after which the victim was burned at the midsummer fire-festival and the victor assumed his place and title until in turn displaced by a stronger.

Golden Bull (Lat. *bull*, knob, seal). Name given to charters of unusual importance, sealed or stamped with a golden seal or bull. A great number of these was issued in Germany in the Middle Ages, but the name is specially given to the document that regulated the election of the German kings from 1356 to 1806.

To determine the disputes as to who were entitled to elect the kings in Germany, the emperor Charles IV ordered a bull to be drawn up, and after some alterations the princes, meeting at Metz, accepted it in Dec., 1356. Written in Latin, this Golden Bull contains 31 chapters which fix the numbers of electors at seven, nominate the seven, and prescribe their respective precedence and duties. Frankfurt is fixed upon as the seat of the elections, the rules for the coronation are declared, and further



Golden-crested Wren, a small bird living in pine woods

and constructs its tiny nest of moss and lichens underneath a bough. It is $3\frac{1}{2}$ ins. long and has a crest of yellow feathers.

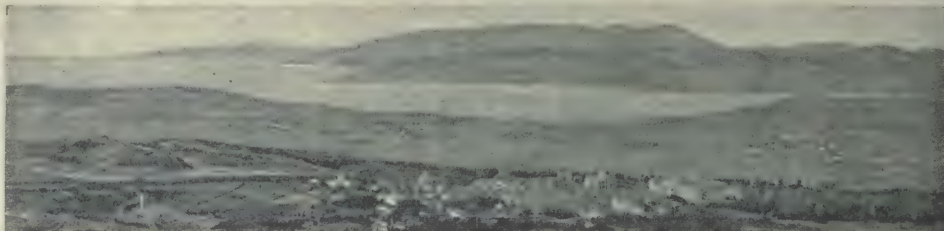
Golden Eye (*Olanqula glaucion*). Wild duck found in the northern districts of both hemispheres. It visits Great Britain in the winter. The plumage is black on the back, with white beneath, and the drake

Golden Fleece, ORDER OF THE. One of the premier European orders of knighthood. It was

founded Jan. 10, 1429, by Philip the Good, duke of Burgundy, on his marriage with Isabella of Portugal, and dedicated to the Virgin Mary and S. Andrew. The grand-mastership passed by marriage to the Hapsburgs, and when the Hapsburg dynasty in Spain came to an end in 1700, was claimed by the emperor Charles VI, who established the order in Vienna in 1713. Since then the order has existed independently in both Spain and



Golden Fleece. Badge of the order



Golden Gate, California. View, from the south, of the channel which connects San Francisco Bay with the Pacific Ocean

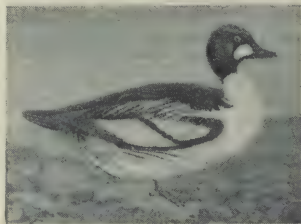
clauses deal with such matters as the rights of the cities and of the king of Bohemia.

In general the bull greatly strengthened the power of the electors, that of the minor princes and the cities being correspondingly reduced. It remained operative until the dissolution of the Empire in 1806. Various copies of the bull are in existence in German cities, and there is an English translation of it in E. F. Henderson's *Select Historical Documents of the Middle Ages*. See *Electors*; *Empire*, *Holy Roman*.

Golden Calf. Image made by Aaron, in response to popular appeal, during the absence of Moses on the mount (Gen. 32). It was in the form of a young bull and made from earrings of gold. Divine honours were paid to it, but it is doubtful if it involved a breach of the first or the second commandment. Jeroboam set up similar images at Dan and Bethel (1 Kings 12). See *Aaron*; *Idolatry*.

Golden-crested Wren OR **GOLDCREST** (*Regulus cristatus*). Small British bird. It is not a true wren, but belongs to the warbler group. It is common in the pine forests in most parts of Europe, where it feeds on insects

has a bright green head. The name, derived from the yellow colour of the eye, is sometimes also applied to the tufted duck.



Golden Eye, a winter visitant of the British Isles

Golden Fleece. In Greek mythology, the object of the quest of Jason and the Argonauts. When Phrixus and Hellē, children of Athamas, king of Thebes, and Nephelē, were about to be sacrificed, owing to the intrigues of Ino, his second wife, a ram with a golden fleece and wings appeared, and bore them away through the air. Hellē fell into the sea, but Phrixus arrived safely at Colchis, where he sacrificed the ram. Aeëtes, king of the country, hung up the fleece in the sacred grove of Arēs. See *Argonauts*; *Jason*.

Austria. The badge is a golden fleece attached by furions, or flint-stones, emitting flames, to a red ribbon worn round the neck, or, on high occasions, to a chain of alternate flint-stones and steels intertwined to represent B, the initial letter of Burgundy. The origin of the badge and name is uncertain.

Golden Gate. Channel connecting San Francisco Bay, California, U.S.A., with the Pacific Ocean. It is 5 m. long and from 1 m. to 2 m. broad, and has bold and rocky shores, rising on the N. side to 200 ft. See *San Francisco*.

Golden Horde. Name given to a body of Tartars who invaded Europe in the 13th century. They belonged to a branch of the race known as Kipchacks. Led by Batu, a grandson of Jenghis Khan, they crossed Russia into Hungary about 1237. Attempts to stop them failed until 1241, when they were checked, and settled on the Volga.

Under Batu's son the empire, or khanate, was consolidated. The race became Mahomedans, but soon their power began to fail. About 1395 they were defeated by Timur, and by about 1500 they had disappeared. The name golden horde was due to the splendid camp (Turk. *ordu*) set up by Batu.

Golden Horn, THE. Narrow inlet of the Bosphorus (*q.v.*) which divides the main part of Constantinople from the Galata and Pera quarters. See Constantinople.

Golden Legend, THE. English title of a collection of lives of the saints, *Legenda Sanctorum*, compiled by Jacobus de Voragine, archbishop of Genoa (d. 1298). The first Latin edition was printed at Basel about 1470, and an English translation, made from the French by William Caxton, was printed by him in 1483 (ed. F. S. Ellis, 1900). The *Legenda Aurea*, as it was soon popularly known, in recognition of its great worth, was translated into most European languages, and frequently reprinted during the first half of the 16th century. The standard edition of the Latin text is by J. G. T. Grässe, 1846.

Golden Number. Number used in calculating the dates of Easter, possibly so called because it was engraved in golden letters on marble pillars in various Greek cities, and marked in gold in the ancient calendars. The golden number is the number of any year in the Metonic cycle, which consists of 19 solar years containing 235 lunations, and was discovered c. 432 B.C. by the Greek astronomer Meton. To find the golden number add 1 to the year and divide by 19; the remainder is the golden number. If there is no remainder the golden number is 19. See Calendar; Easter.

Golden Rain. Popular firework which emits a shower of sparks. It may be used either in a set piece or as the charge for a rocket, functioning when the rocket reaches the highest point of its trajectory. The mixture employed consists of crushed iron or steel turnings and gunpowder, the oxidation of the iron yielding brilliant sparks, while some of the potassium nitrate in the gunpowder is replaced by sodium nitrate to intensify the yellow colour. See Fireworks; Gunpowder.

Golden Rod (*Solidago virgaurea*). Perennial herb of the natural order Compositae. A native of Europe and N. America, its rootstock is stout, and the stems erect, and slightly branched, clad with narrow lance-shaped leaves, and terminating in clusters of small yellow flower-heads. It grows on stony banks and dry ground. The golden rod of gardens (*S. canadensis*) is a N. American species, with taller stems and the flowers in long pyramidal sprays.

Golden Rose. Rose of wrought gold with jewelled petals, blessed by the pope and either presented to some favoured individual or



Golden Horn. View from the cemetery of Eyub, looking towards Stamboul and Galata

preserved in the Vatican. The custom of blessing roses on the 4th Sunday in Lent, hence called *Dominica rosa*, originated at a very early date. Consecrated roses, as symbols of silence, were set over the doors of confessionals, and from this practice arose the phrase *sub rosa*, under the rose, meaning in confidence. A golden rose was presented to Fulk IV of Anjou by Pope Urban II when the first crusade was being organized in 1095, and from about the middle of the 14th century the custom was observed annually. Henry VIII was the recipient of three of these beautiful specimens of the goldsmith's art, and in 1906 Pope Pius X presented one to Queen Victoria of Spain.

Golden Rule. Term often applied to the precept of Christ in the Gospel (Matt. vii, 12), "Whatsoever ye would that men should do unto you, even so do ye also unto them"; often contracted into "Do as you would be done by."

Golden Square. London square, between Bridle Lane and Warwick Street, Regent Street, W. Formed soon after 1688, and a fashionable place of residence in the 18th century, it has been of recent years a centre of the woollen cloth trade. The statue in the centre, of George II habited as an ancient Roman, was originally at Canons, Edgware. Bolingbroke, Mrs. Cibber,



Golden Rod. Clusters of flower-heads of the wild variety

Angelica Kauffmann, John Hunter, and Cardinal Wiseman lived here. Here De Quincey took leave of Ann, and the square figures in Smollett's Humphrey Clinker, Thackeray's Esmond, and Dickens's Nicholas Nickleby. There is another square of this name at Hampstead, N.W.

Golden Square. Town of Victoria, Australia, in Bendigo co. It is 99 m. by rly. N.W. of Melbourne.



Golden Rose. The rose given by Pius II to the republic of Siena in 1458

bourne, and is a gold-mining town. Pop. 2,570.

Golder's Green. Residential district of Middlesex, England. On the main road between Hampstead and Hendon, of which it was formerly a hamlet, it is $\frac{1}{2}$ m. N.W. of Hampstead on the Charing Cross, Euston, and Hampstead Tube Rly., the river Brent forming its N. boundary. Adjoining West Heath, Hampstead, is Golder's Hill Park, 36 acres, purchased in 1898 from the executors of Sir Spencer Wells for £38,500, with mansion, lakes, enclosures for red deer, peafowl, etc. The mansion, used as a refreshment room, was once the residence of Jeremiah Dyson, clerk to the House of Commons, who was frequently visited here by the poet Akenside. About $\frac{1}{2}$ m. from the rly. station is Golder's Green Crematorium (see Cremation), to the N.W. of which is Hampstead Garden Suburb (*q.v.*). Golder's Green rly. station is a busy omnibus terminus.

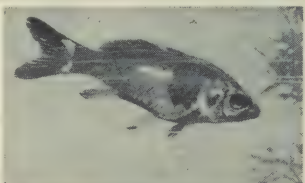
Goldfinch (*Carduelis elegans*). Common British song-bird. About 5 ins. long, its plumage is hand-



Goldfinch. A song-bird of the British hedgerows
Herbridge

somely marked with black, white, and yellow. It feeds on grubs, aphides, and small seeds, and is useful in keeping down the growth of noxious weeds, especially thistles. It nests in trees about May and lays four or five eggs. See Eggs, colour-plate.

Goldfish (*Carassius auratus*). Small fish of the carp family. It is a native of China and Japan.



Goldfish. Specimen of the variegated variety

Originally brown in colour, the golden hue of the domesticated variety is the result of selective breeding in captivity. It is said to have been introduced into Great Britain about the close of the 17th century. Its handsome appearance and hardy constitution make it a favourite species for the aquarium. A specimen has been known to live 29 years in a tank, being fed three times a week on tiny scraps of raw meat. A more convenient food is finely crushed vermicelli, which should be sprinkled on the water in moderate quantities.

The aquarium for goldfish should be more wide than deep, so as to present a large surface for the absorption of air; and be supplied with growing weeds. If the fish are seen gaping at the surface, it is a sign that the water is not sufficiently aerated. They will breed in a large tank, but better results are usually obtained by putting them in a small pond. See Carp.

Goldie, SIR GEORGE DASHWOOD TAUBMAN (b. 1846). British administrator. Born in the Isle of

Man, May 20, 1846, the son of Col. Goldie-Taubman, Speaker of the House of Keys, he was educated at the Royal Military Academy, Woolwich, and obtained a commission in the Royal Engineers. A pioneer in the development of Nigeria, and governor of the territory of the Royal Niger Company from 1895-99, when it was taken over by the imperial government, he attended the Berlin Conference as an authority on Niger affairs in 1884, directed the Niger-Sudan campaign, and in 1897 accompanied the Kabba, Bida, and Florin expeditions. In 1887 he resumed his paternal name of Goldie only, and was made K.C.M.G. He was sworn of the privy council in 1893. He served upon several royal commissions, and became president of the Royal Geographical Society and of the National Defence Association.



Sir G. Taubman Goldie,
British administrator
Russell

Goldingen (Lithuanian *Kuldiga*). Town of Latvia, in the former Russian govt. of Courland. It stands on the Windau, 88 m. W.N.W. of Mitau. There are breweries, distilleries, and needle factories. In the neighbourhood is a ruined castle, formerly the residence of the dukes of Courland. Pop. 9,850.

Gold Lace. Ornamentation employed on uniforms and ceremonial dress. It is particularly used upon the uniforms of naval officers, soldiers in some regiments, ecclesiastical and theatrical garments, and liveries. The term denotes braid or cord, though gold pillow lace is also made. In India the gold thread for making the lace is drawn out so thin that from 1,100 to 1,400 yards of it will only weigh an ounce. It is then flattened by steam rollers and wound by machinery round a strand of silk. A finer thread up to 2,000 yards an ounce is made by drawing it through holes in a diamond or ruby. In some countries, gold lace is made with a copper basis or copper and silver, and the cheaper sort is formed of silk or cotton thread covered with wax and gold leaf. For theatrical lace the cotton thread is covered with Dutch metal (*q.v.*).

Gold Leaf. Thin sheet of gold chiefly used for gilding. It is of great antiquity, and was probably first produced in the Far East; but the early Greeks were able to

produce leaf not much over one 100,000th part of an inch in thickness, about three times the thickness of fine modern leaf. The Hebrews and the Egyptians were acquainted with the art, very fine specimens of leaf having been found in several ancient Egyptian mummy cases.

Gold leaf is to-day prepared by first casting the metal in small ingot moulds, using extra high temperature to increase fusibility, followed by annealing the ingots in hot ashes to clean them from grease and improve malleability; rolling down the ingots between hard, highly polished steel rolls, each into a ribbon 10 ft. in length by $1\frac{1}{2}$ ins. wide to the oz. of metal; again annealing after cutting the ribbon into small pieces; piling the little squares between sheets of special paper in a *cutch*, 150 at a time, and beating with a heavy hammer till each piece is about 4 ins. square; cutting these each into four; piling and beating again in a *shoder*, with lighter hammers, the separating material at this stage being gold-beaters' skin; removing from the shoder, cutting again into four; piling in a final shoder and beating till the pieces are about 3 ins. or $3\frac{1}{2}$ ins. square.

Thus the 150 original small squares become 2,400 leaves, which are finally trimmed and packed, 25 at a time, in "books" between thin paper which has been rubbed with ochre to prevent the leaves adhering. The final thickness is usually about one 290,000th part of an inch. The finest leaf is produced from pure metal, but the gold for common purposes may be alloyed either with silver or copper, or with both. See Gold.

Goldmark, KARL (1830-1915).

Hungarian composer. Born May 18, 1830, he studied music at the



Karl Goldmark,
Hungarian composer

Vienna Conservatoire, afterwards playing in theatrical orchestras in Hungarian towns. Fame came to him through his overture *Sakuntala*, produced in Vienna in 1865, and this was greatly enhanced by his opera *The Queen of Sheba*, 1875. His compositions, which include the operas *Merlin*, 1886, *The Cricket on the Hearth*, 1896, and some orchestral pieces, are distinguished for their rich orchestral colouring. Goldmark died Jan. 1, 1915.

Goldoni, CARLO (1707-93). Italian dramatist. Born at Venice, Feb. 25, 1707, the son of a physician, and intended for the law, he took to play-writing, and in a quick succession of comedies revolutionised the Italian stage. Facile in composition, fertile in invention, with a gift



Carlo Goldoni,
Italian dramatist

for writing animated dialogue, and an abounding sense of humour, he wrote many works more remarkable for their wit than their morality, such as *The Twins of Venice*, *The Weak-Headed Lady*, *The Lady of Merit*, *The Obedient Daughter*, and *The Landlady*; comedies that, at least, reflected much of the lighter life of his time. A dispute with his rival, Count Gozzi, who provoked him by parody, led Goldoni to leave Italy for Paris, where he became attached to the court. He died Feb. 6, 1793. See *Italy: Literature*; consult also *Mémoires*, 1787; Goldoni and the Venice of his Times, J. S. Kennard, 1920.

Gold Point. In financial circles, the point at which it pays bankers in one country to export gold to another in discharge of their liabilities. Usually foreign payments are made by bills of exchange, but if the price of these bills passes a certain point it will be more economical to ship gold than to purchase bills. See *Exchange*.

Golds. Primitive tribe on the banks of the lower Amur, Sungari, and Usuri rivers, E. Siberia. Allied to the Tungus in race and speech, and preserving primitive Altaian characters and shamanism, they and their swine and dogs subsist mainly on river fishes. They practise a skilful decorative art.

Gold Salts. Gold unites directly with chlorine to form gold dichloride, which when brought in contact with water is decomposed into aurous chloride (AuCl) and auric chloride (AuCl_3). Auric chloride or gold trichloride is, however, usually made by dissolving gold in aqua regia, a mixture of four parts of hydrochloric acid, and one part of nitric acid. Gold trichloride is used in photography for toning silver prints, a process which replaces the silver of the photography by metallic gold.

The oxides of gold are prepared from the chloride, and from gold trihydroxide is made the form of metallic gold used in miniature painting. See *Gold*.

Goldschmidt, MEIER ADOLF (1819-87). Danish author. He began his career as contributor to *Nestved Ugeblad*, later *Corsaren*, the *Danish Punch*. His first novel, *The Jew*, 1845, provided him with a theme that he made his own among Danish novelists, and to which he returns in many of his *Tales*, 1846, and later books. He started two journals: *North and South*, 1847, a monthly magazine written entirely by himself; and *At Home and Abroad*, 1861, to which he contributed brilliant



articles on life and politics. Among his novels may be mentioned *Homeless*, 1853-57, Eng. trans. by the author 1861; *The Heir*, 1865; *The Raven*, 1867; *Avrohmeh Nattegal*, 1871.

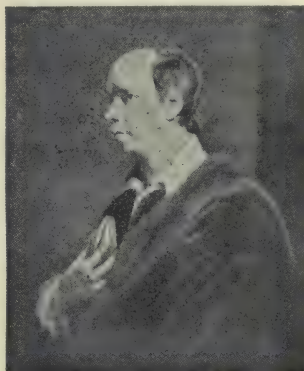
Goldsmith. One who works in gold. The term is also applied to workers in precious metals generally and to dealers in gold and silver plate. Goldsmiths were among the earliest of the great craftsmen. They are referred to in the O.T. (Neh. iii, 8 and 31; Isaiah xl, 19; xli, 7; xlii, 6).

The craft was brought to a high perfection in Italy, France, and Germany. In England more attention was paid to silver plate, though the goldsmith's craft was not neglected. Owing to the great value of gold, artists chose bronze for the bulk of their grander conceptions, but many of the greatest painters and sculptors began their art education in the goldsmith's shop.

Francia was a goldsmith and signed several of his pictures "Francia the goldsmith." Domenico Ghirlandaio, Michelangelo's teacher, was goldsmith as well as painter. Andrea Verrocchio, the master of Leonardo da Vinci, practised the art, and Lorenzo Ghiberti acquired as goldsmith the skill which enabled him to beat out the two bronze gates for the baptistery at Florence which Michelangelo declared were worthy of Paradise. (See *Door*, illus). Goldsmiths were also bankers. See *Banking*; *Goldsmiths' Company*; *Hall Mark*; *Jewelry*; consult also *The Art of the Goldsmith and Jeweller*, T. B. Wigley, 1898; *English Goldsmiths and Their Marks*, C. J. Jackson, 1905; *Goldsmiths' and Silversmiths' Work*, N. Dawson, 1907.

Goldsmith, OLIVER (1728-74). Irish writer. Born at Pallas, co. Longford, Ireland, Nov. 10, 1728,

the son of a clergyman, the greater part of his boyhood was spent at the little village of Lissoy, in West Meath, the Sweet Auburn of *The Deserted Village*. Neither at school nor at Trinity College, Dublin, where he went in 1744, did Goldsmith give promise of future greatness. Successive attempts to get him into the Church and the legal profession having failed, Goldsmith's relatives sent him to Edinburgh to study medicine in 1752, with equally unsatisfactory results. From 1754-56 his life was that of a wanderer. He visited Holland, ostensibly studying at Leiden, Belgium, France, Switzerland, Italy, and Germany, journeying on foot from place to place. Sometimes he enjoyed the hospitality of universities which welcomed peripatetic scholars to their disputations, more often he was dependent for food and lodging on some humble wayside cottage whose inmates he repaid for their kindness by a tune on his flute.



Oliver Goldsmith

From the portrait by Reynolds in the
National Portrait Gallery

Goldsmith's experiences during these years are reflected in his poem *The Traveller*.

Settling in London in 1756, Goldsmith tried many ways of earning a living, including acting and teaching, but always without success. Failing to pass the examination for surgeon's mate in the navy, he determined to settle down as a bookseller's hack, writing on an amazing variety of subjects of which he had no particular knowledge. This class of work he continued more or less all the rest of his life. A book on *Natural History and histories of England and Rome* are the most notable of his hack productions.

His first real contribution to English classics was the *Letters of a Citizen of the World*, published in



Goldsmith. Dr. Johnson reading the MS. of *The Vicar of Wakefield*. Recognizing its merits, he sold it for £60, and thus helped the author to pay his debts

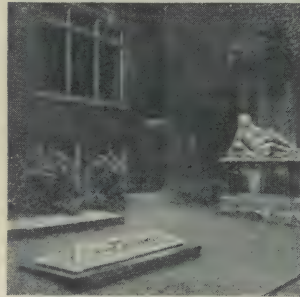
From the picture by E. M. Ward, R.A.

1762, but originally issued serially in *The Public Ledger*. The Letters professed to be from the hand of a Chinese philosopher on a visit to England, and contain much diverting comment on contemporary life and manners. By this time Goldsmith had written a great deal for various periodicals, including *The British Magazine*, started by Smollett, the novelist, with whom Goldsmith was on very friendly terms. He had also published a book, *An Inquiry into the State of Polite Learning in Europe*, which had a favourable reception. In 1761 Goldsmith became friendly with Dr. Johnson, and was soon a regular member of the Johnsonian circle, which included Burke, Reynolds, and Garrick.

Fortune, long so unpropitious, now began to smile on him. He had a steady income from his hack work, while his more worthy efforts were not altogether unremunerative. In 1764 appeared *The Traveller*, which in Johnson's opinion gave Goldsmith a high place in English literature. This was followed by that inimitable story, *The Vicar of Wakefield* (1766), and *The Deserted Village* (1770), one of the most charming of English poems. He also essayed writing for the stage with *The Good Natured Man* (1768) and *She Stoops to Conquer* (1774), successful on its production and a favourite to this day. His last piece of work was the satirical poem *Retaliation*, written shortly before his death. Notwithstanding the comparative affluence of his later years, he died in London, April 4, 1774, £2,000 in debt. A memorial in the Temple churchyard marks the whereabouts of his

grave, not precisely known, and there is a cenotaph to him in Westminster Abbey with an inscription by Johnson.

As a poet Goldsmith will always command a high place. Though under the influence of the school of



Goldsmith. Slab marking approximately where Oliver Goldsmith was buried, near the Temple Church, London

Pope, he shows a humanity and breadth of feeling not usually associated with that school. His prose

is marked by simplicity, clarity and singular charm. *The Vicar of Wakefield*, notwithstanding its faults of construction, shows great skill in characterisation and is a notable landmark in the evolution of the novel. Personally Goldsmith was one of the least favoured of men, shy,

awkward, and sadly marked by smallpox. See *English Literature*.

J. McBain

Bibliography. Lives, J. Prior, 1837; W. Irving, 1849; J. Forster, 6th ed. 1877; W. Black, 1878; A. Dobson, 1888.

Goldsmiths' Company. Fifth of the twelve great London city livery companies. The first of its 15 charters was granted in 1327, 20 years after a statute of Edward I had vested in the company the right of assay. Gregory de Rokesley, lord mayor 1275-81



Goldsmiths' Company arms

and 1285, and master of all the king's mints throughout England, was a member, as were Sir Nicholas Farindon and Sir Francis Child, and the company had a chapel, dedicated to S. Dunstan, in S. Paul's Cathedral. The first hall, in Foster Lane, E.C., was built about 1407, was destroyed in the Great Fire, and rebuilt by Wren. The existing hall was opened in 1835. In the court-room is a small altar of Diana, found when the foundations were being made.

The company assays plate, its hall mark being a leopard's head, keeps the pyx (*q.v.*), built and endowed a technical institute at New Cross, 1891, at a cost of £85,000, and acts as guardian to many charities and scholastic foundations. The corporate income is estimated at £43,000 and the trust income at £16,000. See *Hall Mark*; consult *Memorials of the Goldsmiths' Company*, ed. W. S. Prideaux, 1896.

Gold Stick. British court official. In England the appointment is held in turn by the colonels of the regiments of household cavalry, each of whom is in waiting for a month at a time. The captain-general of the Royal Company of Archers is Gold Stick for Scotland. The officer in waiting walks behind the sovereign on state occasions.



Goldsmiths' Company. Hall of the Company in which hall marks are placed on gold and silver plate

Gold Stripe. Distinctive badge authorised in 1916 for use in the British army during the Great War to indicate at first men who had been wounded by hostile action while serving abroad. The badge, commonly known as a wound stripe, was a strip of Russian gold lace, about $\frac{1}{8}$ in. wide and 2 ins. long, worn on the left sleeve in a vertical position. See Stripe.

In the French Army a badge of similar significance was adopted consisting of a small chevron in gold lace worn point uppermost on the right sleeve above the elbow.

Gold-thread (*Coptis trifolia*). Perennial evergreen herb of the natural order Ranunculaceae. It is a native of N. America and N. Europe. The rootstocks are bright yellow and bitter, the leaves divided into three oval leaflets, and the white flowers have both sepals



Gold-thread, a perennial herb whose roots are used medicinally and for dye

and petals coloured. The roots are used as a tonic, and for dyeing.

Goletta or LA GOULETTE. Port of Tunisia, on the Bay of Tunis. Formerly the port of Tunis, it is now connected with the city by a ship canal, 7 m. in length, through lake El-Bahira. Since the cutting of the canal, Goletta has lost its former importance. Many of its buildings are constructed of stone from Carthage. It was taken by Charles V in 1535. Pop. about 5,000.



Goletta, Tunis. The quays and shipping at the mouth of the canal to Tunis

GOLF: HOW THE GAME IS PLAYED

Horace G. Hutchinson, Amateur Golf Champion, 1896-97

In addition to this article are also biographies of the leading golfers, Ball, Braid, Duncan, and others. There are also articles on all the other forms of sport, e.g. Cricket; Football; Hockey

Game played upon a course 4 m. or more in length, laid out on links, i.e. sandy ground by the sea, or over land set with obstacles, and containing 18 holes of a statutory diameter of 4 $\frac{1}{4}$ ins., into each of which it is the player's object to strike his ball successively, in fewer strokes than his opponent. Sometimes two, playing alternate strokes with one ball, will play against two others doing likewise. In this form the match is called a "foursome." When one plays against one, the match is called a "single."

Golf, the national game of Scotland, was probably of native origin. The court of James I of England and VI of Scotland brought it to Blackheath where it was played for nearly three centuries before that good example was followed elsewhere in Great Britain. The first English club of any note was the Royal North Devon, at Westward Ho! inaugurated in 1864. The headquarters of the Scottish game is in Scotland—at St. Andrews, the course of the Royal and Ancient Golf Club. The rules (of the game) are interpreted (and altered, if circumstances demand it) by the Rules of Golf Committee, whose ruling obtains almost universally.

Simplification of the Game

Since about the year 1880 various steps have been taken in the direction of simplifying the game, the clubs in particular being adapted better to their purpose. Notably the number of iron clubs relatively to the wooden has been increased—in part because the modern indiarubber-filled balls respond in a more lively way to the impact of iron than the solid balls of guttapercha used to—and the shape of both wooden and iron clubs has been modified by making them shorter in the head than they were of old, and thus massing the weight behind the point of impact.

The modern rubber-cored balls came into vogue about the year 1902, when Herd won the open championship with them at Hoylake. For a while there was much opposition to them; it was

even suggested that the Rules of Golf Committee should pronounce them illegal instruments for the game. These balls go farther, with less force of stroke impelling them, than the old "gutties." Thus they have made the game more pleasant for the less muscular, the old, and the feminine.

The Indiarubber Ball

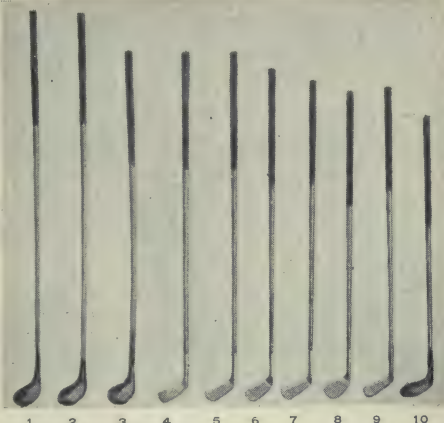
Another change produced by the modern balls has been the general lengthening of the courses, to correspond to the general lengthening of driving. Playing from the tee, if the perfect drive with a rubber-cored ball and with a solid gutty respectively be measured against each other, the difference is barely appreciable. But if the two balls be hit each just a little off that dead right centre of the club face, then the difference in length may run into a score or two of yards. The indiarubber-cored will go far beyond the other.

In this way, therefore, the modern ball has diminished the premium on perfect accuracy; in other words "has made the game easier."

But if the two balls perfectly and stoutly hit from the tee will thus travel equally, the indiarubber-cored ball is still likely to be within an iron club's range of the hole, while the guttapercha ball is not; because the indiarubber-cored goes much farther off iron than the gutty will go. Moreover, it is more easily lifted, it rises more quickly off a hard, unkindly lie; whereby again it has increased the easiness of the game. And the fact of its farther travel off the iron clubs is the principal reason why the courses which were just right for the gutty balls were found to be just wrong—erring on the short side—for the rubber-cored.

Long and Short Games

This coming of the rubber-cored balls and consequent lengthening of all our courses is the most important happening in modern golf. And if this were the whole of the story it would seem as if the rubber-core had made the game far easier all round. Easier, it certainly has made it, but that enhanced easiness is all in the long game. For the play of the short game the gutty ball is easier than the other. The gutty can be stopped more dead off the mashie in the approach stroke, and can be played more boldly at the back of the hole in the putt. But setting the advantages and disadvantages against



Golf. Clubs used in playing the game. 1, driver; 2, brassie, similar to driver, but with brass sole and face more laid back; 3, baffle or spoon, with larger and more sloping face than brassie; 4, cleek; 5, mid-iron; 6, mashie; 7, jigger; 8, niblick; 9, cleek putter; 10, wooden putter with lead face

each other, the rubber-core wins on balance. Its greater length of travel, especially off the iron clubs, outweighs the greater difficulties which it introduces into the short game. Quite recent legislation has standardised size and weight of balls in order to prevent inordinate length of driving, but the little experiment already made with the standard balls induces some scepticism as to whether much has been effected by it.

Considering how large a change has been made by these comparatively modern balls, it is singular how slight the change has been in clubs, in the mode of their use, and in the best men using them. Even when Herd won the first championship played with the new ball in 1902, the three best golfers in the world were Braid, Taylor, and Vardon. They remained but very little, if at all, behind best in 1920. There has been a variety of fashions in clubs—"fishing-rod" drivers, "dreadnoughts," and what not—but finally a happy medium seems to have been established. Experiment and innovation have, however, not ceased, for American golfers have proposed for use a new fashion of putter and a ribbed-faced mashie. The latter appears to have a distinct advantage in that it makes a rubber-cored ball stop on the green in the way in which the gutty ball stops dead.

The Clubs Used

Speaking generally, the clubs which constitute the ordinary golfer's full equipment are: driver, brassie, driving mashie, cleek or driving iron (one or other of the last three should be enough for the

reasonable man, though many golfers carry an unreasonable superfluity), mid-iron, lofting mashie, and putter. The last may be of iron, wood, or aluminium. The beginner may be advised to limit his set to a brassie, iron, mashie and putter. It is noteworthy that the great professionals frequently make excellent use of clubs which can only be described as mongrels.

In addressing himself to the full driving shot, the player should stand, roughly speaking, square

to the ball, i.e. so that a line drawn from the toes of one foot to the toes of the other shall be parallel with the intended line of the ball's flight. The driver is the longest of the clubs, and is designed for the longest strokes, and the clubs decrease progressively in length of shaft as the strokes for which they are intended are shorter. And increasingly, as the golfer takes in hand a shorter club, will he tend to advance his right foot and withdraw the left in making his address to the ball. This is true of all the clubs and of all the strokes, progressively, down to the putter. With the putter there are so many different modes of address to the ball that it is useless to suggest any classic style for this humble but most important part of the game. With the lofting mashie this advance of the right foot and withdrawal of the left reaches its extreme, and the player is then said to be standing "open"—presumably because he is, thus, more full-faced towards the line of the ball's flight.

This is virtually the universal rule for all good golfers: that they stand more and more open as they play with the shorter clubs and as they make the shorter strokes; but, besides this, there is a great individual difference, even among the best golfers, in regard to the stance, whether "square" or more or less "open," for the full drive. This is strikingly illustrated by the example of the three great British golfers, Braid, Vardon, and Taylor, named here in this order of deliberate design, because Braid often drives with the left foot even

a little advanced, relatively to the right, so as to stand even more than square, so to say, to the ball; Vardon, on the other hand, stands nearly square, but slightly open, and Taylor so extremely open, even for the full drive, that he appears to vary his stance remarkably little for the shorter strokes.

A hint of practical value may be got from noticing these differences, because they seem to be the natural outcome of the marked difference in build of these three great golfers. Braid is tall and loosely built; Taylor very thick-set and "cobby"; Vardon is the medium between them, a very finely made athlete indeed. Each presumably has evolved the style best suited to his particular build, and, that being so, it seems that the learner who is tall and rather loosely jointed, as Braid appears to be, would do best to take that fine example for his model, to adopt the square, if not the ultra-square, address for the drive.

Build and Stance

The Taylor-built man, on the other hand, would probably find his advantage in standing as Taylor does, very open, and the medium-made man in following Vardon, with his stance just a little less open than square. The suggestion is only offered as likely to be of value, for there are many exceptions to the rule of the cobby-built golfer standing open, and vice versa. One of the most open stances was that of Jack Graham, killed in action, who certainly was of the loose-jointed make.



Golf. The Vardon overlapping grip, illustrated by a direct plaster cast from Harry Vardon's hands

Reproduced from the original at South Heris Golf Club, by courtesy of the Committee

The ball will be farthest from the player as he addresses it for the longest shots; nearest him for the shortest. That almost follows from the different lengths of the clubs. But for the shorter shots, the hands



1. Old Scottish stance, with slightly bent knees, Duncan. 2. Open stance, with ball opposite left toe, Duncan. 3. Finishing a drive, Duncan. 4. Top of swing for brassie shot, J. H. Taylor. 5 and 6. Iron

shot: 5, top of swing; 6, finish, Vardon. 7 and 8. Similar shot by Braid. 9. Keeping head down after mashie shot by placing right foot where ball lay, Duncan. 10. "Run up" finish to mashie shot, Abe Mitchell. 11. Putting (note straight left arm), Abe Mitchell

GOLF : STANCES AND STROKES BY FAMOUS PLAYERS OF THE ROYAL AND ANCIENT GAME

1, 2, and 9, A. Ulliyett, *Upminster*; 5, 6, 7, 8, 10, and 11, *Sport and General*

are kept closer into the body than in the longer; so this also has the effect of bringing the player and the ball nearer together. In the case of a square stance it should be about equidistant from both feet. When standing open it will be much nearer the right.

The modern golfer has much reduced what is called the length of the swing from the full measure which used to be admired. The old ideal was a swing which brought the club at its farthest almost to the perpendicular behind the player's back. An illustration of it is to be found in the swing of Hugh Kirkaldy as immortalised on the back of the Badminton Library Golf volume. Nowadays, if a man has the club at the horizontal behind his back he is deemed to have gone far enough, and any more to be a superfluity. No doubt this makes for finer accuracy, and, besides, the modern mode of gripping the club does not lend itself to any extreme length of swing.

The Modern Grip

Details of the modern grip are intricate. Much is heard of the "interlocking" and the "overlapping." In the former a finger or two of the one hand is crooked within a finger or two of the other—there are several modifications; in the latter a finger or two of the one hand merely over-lies, without crooking round, a finger or two of the other; but the essence of the grip and its purpose is in both instances the same. It is always a difficulty in the golfing stroke to get the two hands working perfectly together, not to have the one tugging a little against the other and so disturbing the perfection of its directing influence at the critical moment. The idea is to "get the two hands working as one," and in no way can this be contrived better than by making virtually one hand of the two by means of this "Vardon grip," or one of its varieties.

The essential of the golfing stroke is, generally speaking, that the club head shall be travelling, at its moment of impact with the ball, in the proposed direction of the ball's flight. It is obvious that only thus can the ball be struck the most direct and forcible blow possible. Thus, too, is it struck straight, and none of that cut is put on it which has the result of making it deviate to the right or left of the desired line with "pull" or "slice." Cut, of course, may be put on the ball purposely, in order to make it bite into the ground on alighting, and thus not to travel far but to "pitch dead," as it is called, but this is a different matter.

In order to achieve this true travel of the club-head in the line of the ball's flight, either the two hands must work as one, or the one hand must be decidedly the master hand. It was always the left hand with which the golfing pupil used to be taught to grip tight, the right hand doing a little of the more forceful work of the drive; and doubtless it is the left which has to be the master hand still, although the golfer of to-day puts more power in with his right than his ancestors used to. But that is a maxim for the longer strokes and for the squarer stances mainly. As the strokes grow shorter, as the ball is brought nearer to the right foot, and as the stance becomes more open, so the right hand tends to do more of the work, and the left ceases, more and more, to be the master.

The golfer of old used to let the club handle fall back, at the top of the swing, on to the web between the first finger and thumb of the right hand, but the modern golfer is taught never to shift the grip of either hand throughout the swing, and many have both thumbs straight down the handle of the club throughout the stroke. With this grip the length of what was once extolled as "the St. Andrews swing" would surely be impossible, even if it were desired.

The Follow-through

It was one of the first maxims among the old school of golfers that the stroke should be well "followed through," which meant, if analysed, that the club head should travel on well along the line of the ball's flight. It is a good maxim still, for the purpose of teaching the learner to strike the ball correctly, but in the dynamics of the stroke it has not all its old importance, because the rubber-cored balls start away more quickly than the solid "guttie," and do not remain so long in contact with the club. Certainly, modern golfers do not follow through the stroke as their forefathers did; and one does not see that they lose anything.

The time-honoured dicta of "Slow back," "Don't press," and "Keep your eye on the ball," are still to be revered as profitable texts. The modern tendency is undoubtedly to make the stroke less of a swing and more of a hit than it used to be; but still, as ever of old, the besetting sin of all golfing flesh is to hurry the club away from the ball unduly fast in the back swing, to hit too soon, too hard, and without perfect timing and control; and still, as ever, it is better that you should look at the ball when

you hit rather than yield to the perpetual temptation to cast your gaze forward to where you hope to see the ball cleaving the heavens.

Another evil temptation is to let the body sway away as the club is swung upward. The body must be allowed to turn freely on the hips, and this turn is assisted by letting the heel of the left foot come away off the ground, by giving a turn on the toes of this foot and by bending, in and towards the right, the left knee. The movement will be far more easily realized if attempted with a club, or even a walking stick in the hand, and if a trial swing be made with it. But though the body thus turns, the hips and the shoulders going round as though on the vertebrae for their axis, it should not be carried farther away from the ball at any one moment of the swing than at any other, and this keeping at the same distance throughout is best accomplished by remembering to keep the head steady, not to let the head take any part in the turning movement. If this be borne in mind, any tendency to sway the body away ought to be naturally corrected.

Driving High and Low Balls

Sometimes it is better to drive a high ball, especially when the wind is behind, so as to take full advantage of it; and to get this extra height the "first aid," so to say, is to tee the ball high, to set it well up on a good pile of sand so as to let the club-head get well under it. That is the first aid to elevation, and the second is to stand with the ball rather more towards the player's left than for a stroke in which there is no need for special height of trajectory. The mechanical reason why this position tends to put the ball high into the air is that the club-head has begun to rise a little by the time it meets the ball.

Conversely, when the wind is against the direction in which the ball has to travel, the ball should be kept low, skimming at slight elevation above the ground, so that the full force of the wind should not meet it. This is accomplished by teeing low, and by standing so that the ball is more towards the player's right than when he is addressing it for a stroke which is designed to give it the normal trajectory.

In the play with the wooden clubs, whether from the tee or from a fair lie through the green, it is the aim of the player to strike the ball clearly away without any abrasion of the turf; but, at their iron club shots, good players almost invariably cut out and send flying a larger or smaller slice of turf. This slice of turf is called, in

golfing parlance, the "divot," which all homilies on the game beseech one almost tearfully to replace after excision. It is, of course, in the interests of the turf itself that this entreaty is made. If the divot is replaced at once there is every chance of its roots growing, so that the scar is scarcely visible; if it is left to lie and grow parched the excavated hole remains like a wound on a fair skin, and the excisor is heavily cursed by a following player whose ball is trapped in the hole.

These divots are cut by the iron clubs of a skilled player, not before the club-head comes to the ball, but just after it has met the ball's hinder circumference. The stroke is, in fact, more of a downward one than the ordinary stroke with the wooden clubs. It is a stroke which is sometimes used with the wooden brassie also, particularly if the ball be lying in just such a cup as is apt to be left by the careless player who has not replaced the divot.

Divot Cutting

The flatter driving swing is then not adapted for this difficult situation, for with the flat swing the club-head would meet the near lip of the cup before coming to the ball, and so much of its force of impact on the ball would be spent, as on a cushion or buffer of earth and grass. The more downward swing enables the club-head to nip in between the hinder lip of the cup and the ball. It is, of course, impossible, in this stroke, that the club-head shall follow on at all freely in the direction of the ball's flight. Rather it goes on downward into the turf, and it is thus that it cuts out and sends flying the divot.

No satisfactory explanation has yet been forthcoming, but the fact remains that a stroke played with this downward swing of the iron clubs, thus going on and cutting out the divot, seems to send the ball away with a flight more controlled in accordance with the player's intent than when it is swept away clearly and without any excision of turf. While the reason remains unknown, its truth is testified by the general practice of every good golfer.

The most nearly perpendicular in movement of all the strokes in the game is that in which the player is making a short shot with the mashie up to the hole, and is putting on as much back spin as possible on the ball so that it shall fall as dead as may be on alighting. The comparatively straight downward impact on the hinder circumference of the ball has, presumably, an effect similar to that of the *masé* shot in billiards. It stops

the ball from running far after pitching.

The Short Game

Probably there is more of individual option and less of any stereotyped and classical style in the putting—the short game near the hole—than in any other department of golf. It has sometimes been charged to golf as a weakness and a lack of relative proportion in its different branches that, whereas a fine player may go round an 18-hole course in 72 strokes, no less than 36 of these, or one-half, are likely to be played on the putting green, i.e. within 20 yds. of the hole. Perhaps it is an undue proportion, but we have to take the game as we find it, and, seeing that this is the proportion which exists, it is no wonder that we often hear it said that most matches are lost and won on the putting green.

This short game, therefore, though not the most exhilarating, is perhaps the most important part of the whole business; and if it is impossible to lay down any rules for its execution, it may at least be said that every really fine putter, no matter what his manner of address to the ball may be in the putting strokes, brings his club well away back from the ball before delivering the blow, and carries the club well and smoothly after the ball along the line of its travel. That, really, is the essential; the rest, the means by which this smoothness of stroke is to be obtained, is really secondary.

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Golgotha (Heb., skull). Hill outside Jerusalem where Christ was crucified. See Calvary.

Goliath. Philistine of Gath. He was a man of gigantic stature who challenged Saul's soldiers to single combat, and was slain by David with his sling. There appears to have been another Goliath of Gath who was killed by Elhanan, one of David's men (1 Sam. 17-22).

Goliath. British battleship. On Nov. 28, 1914, she assisted in the bombardment of Dar-es-Salaam, German E. Africa. She was the

first warship in the Great War to be sunk by a torpedo fired from any vessel other than a submarine. On the night of May 13, 1915, she was protecting the flank of the French army a short distance inside the Dardanelles, when she was attacked and destroyed by the Turkish destroyer Mauvenet-i-Millet, Captain T. L. Shelford, 24 other officers, and 482 men being lost. The Goliath was launched at Chatham in 1898, and completed two years later at a cost of £866,006, carrying four 12-in. and twelve 6-in. guns on a displacement of 12,950 tons. See Canopus; Dardanelles, Attacks on the.

Goliath Beetle (*Goliathus*). One of the largest of the tropical beetles. It is found in Central



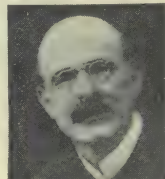
Goliath Beetle of tropical Africa

Southern Africa, and frequently measures 4 ins. in length. Its colour is usually black, but it is often variegated with white. It is said to live on the sap of forest trees. See Beetle; Insects.

Gollancz, SIR ISRAEL (b. 1864).

British man of letters. Born in London and educated at the City of London School and Christ's College, Cambridge, he became professor of English literature at King's College, London, 1906. Secretary of the British Academy since 1907 and knighted in 1919, he is an authority on early English texts. He edited *The Pearl*, 1891; *The Exeter Book of Anglo-Saxon Poetry*, 1897, etc.; *The Temple Shakespeare*, 1894-96; and was general editor of *The Temple Classics*.

Goliwogg. A black woolly male doll with long straight black hair, bead eyes, and red mouth. Popular with all children, the goliwogg has become a favourite figure with authors who specialise in juvenile literature. In several books by Bertha Upton the goliwogg figures as the hero alone or with other dolls: *The Goliwogg's Bicycle Club*, 1896; *The Goliwogg at the Seaside*, 1898; *The Goliwogg in War*, 1899; *The Goliwogg's Christmas*, 1907. See Doll.



Sir Israel Gollancz, British man of letters Russell

Gölniczbánya. Town in the Slovakia division of the Czechoslovak republic, now known as Gelnic; formerly in the kingdom of Hungary. It is situated in the highlands, 5 m. by rly. on a branch line from the main line through the Carpathian valleys from Košice to Bratislava (Pressburg). It has iron and copper mines and iron-works. More than half the inhabitants are Germans, the rest being Slovaks and Magyars. Roman Catholics are more numerous than Lutherans. Pop. 3,833.

Golosh or **GALOSH** (Fr. *galoche*). Vulcanised rubber overshoe. An American invention, it was introduced into Great Britain about 1847. Originally golosh signified any kind of boot or shoe, but more especially a wooden clog or patten. The word is ultimately derived from Gr. *kálopodion*, diminutive of *kálopous*, a shoemaker's last.

Golovnin, **VASILII MIKHAILOVICH** (1776-1831). Russian seaman. In 1805 he commanded a vessel named the *Diana*, with the object of exploring the coastlands of Russia and making a voyage round the world. He was seized and imprisoned for two years by the Japanese (1811-13), but made another voyage. Afterwards he wrote an interesting account of his experiences and of the manners and customs of his captors.

Goltz, **KOLMAR VON DER** (1843-1916). German soldier. Born Aug. 12, 1843, at Bielkenfeld, near

Labiau, E. Prussia, he entered the Prussian army as a lieutenant in 1861. In the Franco-Prussian War he was on the staff of Prince Frederick Charles and afterwards served on the historical section of the general staff in Berlin. In 1883 he undertook the reorganization of the Turkish army with the rank of pasha, and remained in Turkey for twelve years. In 1908 he became field-marshal, and headed a German mission to Constantinople, where he had much to do with the Young Turk movement.

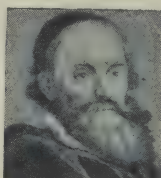


Kolmar von der Goltz,
German soldier

When the Great War broke out Goltz accompanied the German army into Belgium, and was made governor-general, first of Brussels and then of Belgium. Early in 1915 he went to Turkey, and he commanded a Turkish army near Constantinople during the allied attack on Gallipoli. For some time he directed Turkish operations in the

Middle East, but on April 19, 1916, died of spotted fever at his headquarters. His most notable work, *The Nation in Arms*, 1883, had much influence in strengthening the fighting spirit in Germany. Among his other works were: *The War History of Germany in the Nineteenth Century*; *Campaigns of Frederick the Great*. His nephew, General von der Goltz, commanded the German forces in Lettland in 1919, and captured Riga in Oct. of that year, carrying on a campaign in the Baltic provinces after Germany had been ordered to evacuate them in accordance with the treaty of Versailles.

Goltzius, **HENDRIK** (1558-1616). Dutch engraver and painter. He was born at Mülbrecht in the duchy of Jülich, and died at Haarlem. As a painter he never achieved great distinction, although he had specially studied the works of Michelangelo and Raphael. His engravings, on the other hand, rank with the best of the German school of the 16th century, showing immense virility and technical skill, although frequently erring in the matter of aesthetic taste. He engraved portraits and miscellaneous subjects after his own designs and those of various Italian, Flemish, and German masters.



Hendrik Goltzius,
Dutch engraver
Self-portrait

Goluchowski, **AGENOR**, COUNT (1812-75). Austrian statesman. Of Polish descent, he was educated by the Jesuits. He entered the diplomatic service of Austria, becoming minister of the interior in 1859, after he had served for twelve years as governor of Galicia. He held his portfolio for a year and resumed his governorship in 1866, occupying the post until his death, with an interval of four years (1867-71). His son Agenor, also a diplomatist, was minister of foreign affairs for Austria-Hungary, 1895-1906.

Gomal or **GOMUL**. River and pass of Afghanistan. The river rises some 50 m. S. of Ghazni and winds through the Suleiman Mts. Except in the rainy season, when it flows into the Indus, its waters are lost in the sands.

Gomara or **KAFFA**. Dependency of Abyssinia. Situated in the S.W., it is noted for its coffee, which takes its name from this district. It is a lofty tableland, watered by the river Omo, and inhabited by people of Hamitic stock.

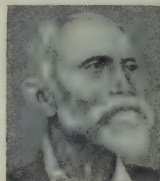
Gomberville, **MARIN LE ROY DE** (1600-74). French author. His prolix Poilexandre, with its extravagant adventures and high-flown sentiment, is a typical example of the *roman galant* popular in the aristocratic circles of the time. He was one of the original members of the Academy.

Gomel. Town in S.W. Russia, in the govt. of Mohilev. It is situated on the Sozh, at the junction of two rlys., 112 m. S.E. of Mohilev. It has large rly. repairing works, sugar refineries, and oil-mills; and considerable trade is done in timber, wool, oil, and sugar. Pop. 37,000.

Gomera. One of the Canary Islands in the Atlantic Ocean. Separated from Tenerife by a channel 13 m. wide, its length is 20 m. and breadth 10 m., area 143 sq. m. Of volcanic origin, with steep coasts, it rises in the interior to an alt. of nearly 4,000 ft. Wooded and well watered, its fertile valleys produce potatoes, fruit, sugar, and cotton. Silk is manufactured, and dromedaries are reared. San Sebastian, the capital and port, has an excellent harbour. Columbus called at the island in 1492. Pop. 19,736.

Gomersal. Parish and village of Yorkshire (W.R.). It is 5½ m. S.E. of Bradford, with a station on the L. & N.W. Rly. The chief industries are the making of worsted, cloth, and blankets, while in the neighbourhood are coal mines. The Red House here is the Briarmains of Charlotte Brontë's *Shirley*. Pop. 3,800.

Gomez, **MAXIMO** (1826-1905). Cuban insurgent leader. Born at San Domingo, his full name was Maximo Gomez y Biez. He drifted to Cuba, where in 1868 he joined the insurgents; ten years later, having taken part in the unsuccessful revolt, he had to seek safety in flight. When affairs between the Cubans and Spain again reached breaking point, he returned and, in 1895, was made commander-in-chief of the Cuban forces. In June of the following year he gained a notable victory at Puerto Principe, and remained one of the three principal leaders of the Cubans until the close of the war, 1898, and the cession of the island to the U.S.A., a cession which he strongly opposed. See *Marching With Gomez*, G. Flint, 1898.



Maximo Gomez,
Cuban insurgent

Gomez Carrillo, **ENRIQUE** (b. 1873). Spanish-American author and journalist. He was born in

Guatemala, his father being a distinguished Spanish historian and his mother of French origin. Early in his career he settled in Paris, and there most of his extraordinary volume of work has been achieved. The Spanish world accepts him as a master of prose, and his work is familiar to the readers of the leading Spanish and South American periodicals. He is seen at his best in his numerous works of travel, such as *From Marseilles to Tokyo*, 1905; *The Soul of Japan*, 1906; and *Greece*, 1907; and in such critical works as *Modernism*. In London, in 1920, his wife, under her stage name, Raquel Meller, made a great success interpreting Spanish dramatic song.

Gomme, Sir George Laurence (1853–1916). British antiquary. Born in London, he was educated



Sir G. L. Gomme,
British antiquary

Elliot & Fry

at the City of London School. He entered the service of the Metropolitan Board of Works, and was transferred later to its successor, the London County Council. In 1891 he was made statistical officer to the council, and in 1900 he became its clerk. In 1911 he was knighted. He resigned in 1914, and died Feb. 23, 1916. Gomme was one of the founders of the Folklore Society, and edited, at one time or other, *The Antiquary*, *The Archaeological Review*, and *The Folklore Journal*. His published works include *Primitive Folk Moots*, 1880; *Ethnology in Folklore*, 1892; *The Governance of London*, 1907, and other books on London. Lady Gomme (Alice Bertha Merck) wrote *Traditional Games of Great Britain*, 1894.

Gommecourt. Village of France, in the dept. of Pas-de-Calais. It is on the road from Albert to Arras, 13½ m. N. of Albert. In the possession of the Germans, 1914–17, who strongly fortified the park of its château, it came into prominence in the first battle of the Somme, when on July 1, 1916, the British 46th and 56th divisions were repulsed. The failure to capture it had marked effect on the result of the battle, as it was a point of great strategic importance. It was yielded up by the Germans on Feb. 27, 1917, in their retreat to the Hindenburg line. Several war cemeteries are in the vicinity, and a British war memorial is to be erected. Gommécourt, captured by the British, Aug. 23, 1918, lies about 6 m. due E. See *Somme*, First Battle of the.

Gomorrah. With Sodom one of the two cities of the plain, where Lot dwelt (Gen. 18, 19). They were notorious for vice, and were mysteriously destroyed by fire. See *Abraham*; *Sodom*.

Gompers, Samuel (1850–1924). American labour leader. Born in London, of Jewish origin, Jan. 27,



Samuel Gompers,
American labour leader

1850, he went to the U.S.A. in 1863. The following year he founded the union of cigar-makers, to which trade he had been apprenticed in England, and laboured incessantly to organize the working classes. Largely responsible for the formation of the American Federation of Labour in 1881, he became its president the following year, holding this office continuously, with one year's break in 1894. This federation drew into itself all the larger unions and did much in carrying reforms through the legislature. Gompers was opposed to Socialism, and denounced all attempts to introduce Sovietism into the policy of the American Labour party. He died Dec. 13, 1924. See *Uncensored Celebrities*, E. T. Raymond, 1918.

Gomuti (*Arenya saccharifera*). Tree of the natural order Palmae, native of the Moluccas. The trunk grows to about 40 ft., and the large leaves are divided featherwise into long, narrow leaflets. The flower-spikes are male or female, and down among the foliage. The flesh of the large round fruit is acid. The horse-hair-like fibres that cover the leafstalks are used for thatching and cordage. The juice of the flower-spikes contains much sugar, and can be converted into toddy or vinegar.



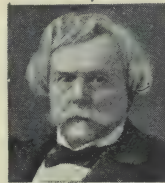
Gomuti. A palm tree of the
Moluccas

Gonaïves. Seaport of Haiti, W. Indies. A prosperous town and a bishop's see on the Bay of Gonaïves, 62 m. N.W. of Port-au-Prince, it has a good harbour and exports coffee, cotton, and dye woods. Here, on Jan. 1, 1804, Dessalines (*q.v.*) declared the independence of Haiti. In 1914 it was the scene of two conflicts between government troops and insurgents. The town was nearly destroyed by an earthquake, May 7, 1842. Pop. 13,000.

Between Cape S. Nicolas-le-Mole and Cape Dame Marie, the Bay of Gonaïves is about 100 m. across and penetrates inland about the same distance. *Pron.* Gonahev.

Gonçalves Dias, Antonio (1823–64). Brazilian poet. Born in Maranhão, Aug. 10, 1823, he was for some time professor at the college of Pedro II in Rio de Janeiro. One of the chief poets of Brazil, he also wrote on ethnographical subjects and compiled a dictionary of Tupi, one of the chief S. American Indian languages. On a voyage home from Europe, he was drowned, Nov. 3, 1864.

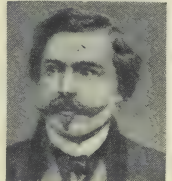
Goncourt, Edmond de (1822–96), and **Jules de** (1830–70). French novelists.



Edmond de Goncourt
French novelist

Known familiarly as the brothers De Goncourt, they belonged to a Lorraine family. Edmond was born at Nancy, May 26, 1822; Jules in Paris, Dec. 17, 1830. Chiefly interested at first in 18th century art and the collection of bric-à-brac, and drawings and pastels of that period—Edmond also became an enthusiastic admirer of Japanese art—they collaborated at first in books of social history, *Histoire de la Société Française pendant la Révolution*, 1854; *La Société Française pendant le Directoire*, 1855; *Histoire de Marie-Antoinette*, 1858.

As collaborators in fiction (1860–70) each composed the same incident independently, and the two versions were afterwards moulded into one. Chief of their novels were *Sœur Philomène*, 1861, a hospital story; *Renée Maupérin*, 1864; *Germinie Lacerteux*, a study of the gradual degeneration



Jules de Goncourt
French novelist

of a servant, 1865; Manette Salomon, a story of a Jewish artist's model, 1867; and Mme. Gervaisais, 1869, the best.

Edmond, independently, wrote Watteau, 1876; Prudhon, 1877; L'Art Japonaise au XVIIIe Siècle, 1891-96; and the novels La Fille Elisa, 1878; Les Frères Zenganno, 1879; La Faustin, 1882; and Chérie, 1885. He edited Les Lettres de Jules de Goncourt, 1885, and the Journal des Goncourt, 1887-92. The brothers collaborated in a play, Henriette Maréchal, 1865; and both kept a diary, reproduced in the much-discussed Journal.

As writers of fiction the brothers de Goncourt were pioneers of the naturalist school. Having collected their materials with laborious industry, they attempted to set forth the naked facts of life in a style designed with equal laboriousness to arrest attention by its supposed suitability to subject or situation. The Académie des Goncourt was founded to help struggling authors by money resulting from the sale of the Goncourt art collection. Jules died June 20, 1870; and Edmond, July 16, 1896. They form a connecting link between Flaubert and Zola. See Nouveaux Essais de Psychologie Contemporaine, Paul Bourget, 1885; Lives, A. Delzant, 1889; M. A. Belloc-Lowndes and M. L. Shedlock, 1895.

Gond. Primitive tribe in Central India. Numbering (in 1911) 2,917,950, two-thirds occupy hill-tracts in the Central Provinces. The Dhur Gonds, dark-skinned, roundish-headed, thick-lipped peasantry, preserve their aboriginal forest life, ceremonial dances, and animism. The hinduised Raj Gonds on the plains claim Rajput descent. Half of them have displaced their Dravidian speech, intermediate between Tamil and Telugu, by Hindi or Gujarati. Four 14th-17th century Gond kingdoms gave this region the name Gondwana.

Gonda. Town and district of India. It is in the United Provinces, in the Fyzabad division. Of the total area (2,813 sq. m.) about two-thirds is under cultivation, and of the cultivated area almost half is devoted to rice. Other crops are wheat, maize, and grain. Exports consist principally of agricultural produce; imports include piece goods, salt, and metals. The last raja of Gonda took part in the Mutiny, and his estates were confiscated. Pop. of town, 15,000.

Gondal. State of Bombay, India. In the Kathiawar agency, its area is 1,024 sq. m. The ruler is a thakur sahib, entitled to a salute of 11 guns.

Gondar. Town of Abyssinia, capital of the prov. of Amhara. It is built on a hill, at an elevation of 6,000 ft., 24 m N.E. of Lake Tsana. At one period a flourishing centre of Abyssinian trade, it has now a population of about 3,000. See Abyssinia.

Gondokoro. Garrison town of Uganda, Central Africa. It stands on the White Nile, 1,081 m. S. of Khartum. Navigation to Rejaf, 15 m. S., and to Khartum, is carried on by the steamers of the Sudan government. Here Sir Samuel Baker established a military station in 1871 and called the settlement Ismailia. Formerly a seat of the slave traffic, it had a large trade in ivory.

Gondola (Ital.). Long, low, narrow, flat-bottomed boat used on the lagoons and canals of Venice. Both prow and stern curve high off the water; each end is



Gondola, the small cabined boat used on the lagoons and canals of Venice

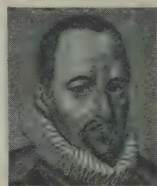
decked, the rowers, or gondoliers, standing up to wield their sweeps. Usually, in the centre, is a carriage-like cabin, with doors and curtained windows. The prow is sometimes still decorated with a curious imitation battle-axe head, the last relic of the sumptuous decorations formerly so profusely lavished on gondolas that sumptuary laws were passed in the 16th century to prevent such extravagances. Since that time, as a rule, these vessels have been painted black. See Venice.

Gondola. In aeronautics, term used to describe the boat-shaped car fitted to an airship. The usual term now is nacelle. See Airship.

Gondoliers, THE. Comic opera by W. S. Gilbert, with music by Arthur Sullivan, and produced, London, Dec. 9, 1889, at The Savoy Theatre, where it ran for 554 performances. The cast included Geraldine Ulmar as Gianetta, Jessie Bond as Tessa, Decima Moore as Casilda, Rosina Brandram as the Duchess of Plaza Toro, Frank Wyatt as the Duke, W. H. Denny as Don Alhambra del Bolero, Rutland Barrington as Giuseppe Palmieri, and Courtice Pounds as Marco Palmieri.

Gondomar, DIEGO SARMIENTO DE ACUÑA, COUNT OF (1567-1626). Spanish diplomatist. Born Nov. 1,

1567, of a wealthy family, he was still young when he was appointed commander of the Portuguese frontier and helped to repulse the English attacks on the coast. In 1613 he was sent as ambassador to England, where he remained, with a brief interval, until 1622. He furthered the projected match between the prince of Wales (Charles I) and a Spanish infanta, and his influence was largely responsible for the execution of Sir Walter Raleigh. He died in Spain, Oct. 2, 1626.



Count of Gondomar, Spanish diplomatist

Gondwana Beds. Series of sandstones, shales, ironstones, and coal-seams, of Permo-Carboniferous age, typically developed in India. They contain abundant fossil plants, the "Glossopteris Flora," which

ranged from Australia through India to Russia, and through Africa to Brazil, marking the former extent of the ancient continent "Gondwanaland." Basement bed, the Talchir conglomerate, is notable on account of presence of huge ice-scratched boulders.

Goneril. Character in Shakespeare's tragedy King Lear. This proverbially unnatural daughter, the eldest of Lear's three children, and wife of the duke of Albany, having received half her father's kingdom, afterwards refused him shelter. Having fallen in love with Edmund, bastard son of the earl of Gloucester, and poisoned Regan, her younger sister and rival, she stabs herself to death on finding that her lover has been mortally wounded in a duel with his brother Edgar. See King Lear.

Gonfalon. Banner used in the Middle Ages, and formed after the fashion of the *vezillum*, or standard of the Roman cavalry. It consisted of a flag attached to a cross-bar and suspended by cords at right angles to the pole. Though at first a war banner, it subsequently became peculiar to the Church. In medieval Florence, Venice, and other Italian cities the standard-bearer, or Gonfaloniere, was an influential officer



Gonfalon, as used in ecclesiastical ceremonies and processions

both in camp and council. The older form of the word was gonfanon, a corruption of the Middle High German gundfano, battle-standard.

Gong. In music, a percussion instrument, made of bronze. Of Oriental origin, it is a large round plate in form, with turned-up edges, and is struck by a heavy drum-stick with hard leather knob,



Gong. Japanese instrument from a temple at Nikko

producing a deafening crash of indefinite pitch. Gongs are largely used in Eastern temples.

Gongora y Argote, LUIS DE (1561-1627). Spanish poet. Born at Cordova, July 11, 1561, and educated at Salamanca University, he began to write poetry when a youth, abandoning the law for which he was trained. Gongora's manner was simple in the first period, but became



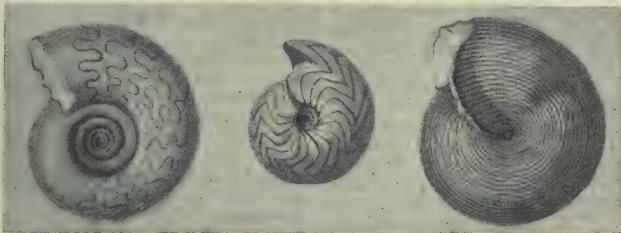
Luis de Gongora y Argote, Spanish poet
After Velasquez

pompous and extravagant in his middle age, his style giving rise to the term Gongorism. Late in life he entered the Church, and lived in Madrid, becoming chaplain to Philip III, and the friend of nobles and hidalgos. Lope de Vega was an enthusiastic admirer of Gongora's poetry. He died at Cordova, May 23, 1627.

Goniatites. Extinct forms of shells, belonging to the class Cephalopoda (*q.v.*). The shells are spirally coiled and divided into chambers

(passing water) is increased, and the act is accompanied with pain.

If the condition is neglected chronic inflammation of the urethra may be set up and lead to persistent discharge, or gleet, which may last for many months or even years, and, however slight, remain highly infectious to other persons. Complications are frequent, glands in the groin may become swollen and suppurate, and the infected parts may become inflamed. Chronic gonorrhoea or



Goniatites. Left to right, *Prororites cyclolobus*, *Glyphioceras sphaericum*, both from Carboniferous limestone in England; *Agathiceras Süssli*, from Permian Carboniferous in Sicily

British Museum

connected by a delicate tube, similar to the existing nautilus. They are common in Devonian rocks.

Goniometer (Gr. *gonia*, angle; *metron*, measure). Instrument used by crystallographers for measuring the angles of crystals. One form, the contact goniometer, consists of a graduated semicircular arc, to the centre of which a pair of adjustable slotted bars provided with straight edges are pivoted in such a manner that they can be fixed at any angle by a screw.

The reflecting goniometer determines the angle between any two faces on a crystal, by obtaining the reflection of light from a collimator (*q.v.*) from each of the two faces in succession.

Gonnelieu. Village of France, in the dept. of Nord. It is about 8 m. S.W. of Cambrai, and 2 m. E. of Gouzeaucourt (*q.v.*). Captured by the British, April 20, 1917, it was taken by the Germans, Nov. 30, 1917, in the first battle of Cambrai, but was retaken by the British, Dec. 1, 1917. See Cambrai, First battle of.

Gonocalyx Pulcher. Evergreen shrub of the natural order Ericaceae. A native of New Grenada, it has oblong leaves and bright red tubular flowers.

Gonorrhoea (Gr. *gonorrhoeia*). Acute infectious disease affecting the organs of generation. The specific organism responsible is known as the gonococcus or *diplococcus gonorrhoeae*. In the male the symptoms usually commence in from two to eight days after infection, frequency of micturition

repeated acute attacks may lead to stricture of the urethra, which brings in its train a series of distressing symptoms.


In the female, gonorrhoea causes pain and swelling of the external organs of generation and a yellow discharge from the vagina. It may attack the bladder, uterus, or Fallopian tubes, producing pus formation and very serious disease, and it is a common cause of sterility. Besides the local effects, constitutional symptoms may arise in either sex. The most frequent of these is gonorrhoeal "rheumatism" or arthritis, which may lead to pain and swelling in the joints, followed by permanent changes and serious crippling. Gonorrhoea may also produce general blood poisoning, resulting in serious disease of the heart or even death.

If the infection is conveyed to the eye it may cause acute inflammation, followed by ulceration and possibly blindness. A painful example of this complication is afforded by infants who are infected by the disease in the mother at the time of birth, an accident which is probably one of the commonest causes of blindness in young children. The immediate cleansing of the eyes after birth is now looked upon as a most important duty of midwives and monthly nurses.

The royal commission on Venereal Disease has called public attention to the serious evils arising from gonorrhoea, and arrangements have been made in all populous centres for the skilled

treatment of the disease under conditions which secure complete secrecy. Consulting a quack or so-called "specialist in venereal disease" may lead to grave mal-treatment or neglect, and cannot be too strongly deprecated. The general principle in the treatment of gonorrhoea is to disinfect the parts attacked and to prevent the inflammation from spreading.

Gonsalvo de Cordova. Name by which the Spanish soldier Gonzalo Hernandez y Aguilar (1453-1515) is usually known. A younger son of a Spanish grandee, the count of Aguilar, he was born at Montilla, near Cordova, March 16, 1453.

 Gonsalvo de Cordova, Spanish soldier

In 1495 Ferdinand and Isabella chose Gonsalvo to command the force sent by them to help Ferdinand of Naples against the French. He remained there until 1498, driving the French from Naples.

In 1501 he returned to Italy to help the French. The allies, however, soon quarrelled, and Gonsalvo's last victories, as his first, were over the French. His great achievements were at Cerignola (1503) and on the Garigliano (1504). His influence was very strong on the military leaders of the 16th century. He died at Granada, Dec. 2, 1515.

Gontard, MAX VON (b. 1861). German soldier. He joined the Königin Augusta regt., and after filling various military posts came under the notice of the kaiser, William II, who made him tutor and military governor to four of his sons. In 1918 he held an important command on the west front.



Max von Gontard, German soldier

Gontcharov, IVAN ALEXANDROVITCH (1814-91). Russian novelist. Born at Simbirsk in S.E. Russia, he occupied positions in various government offices. His first novel, *A Common Story*, 1847, Eng. trans. 1894, was followed the next year by fragments of another, *Oblomov*, which was not finished until ten years later. He died Sept. 27, 1891.

Gonville and Caius College. Official name of the college at Cambridge University, England, usually known as Caius (*pron.* Keys). In 1348 Edmund Gonville,

rector of Torrington, in Norfolk, founded Gonville Hall, near S. Botolph's Church; his executor, Bishop Bateman, in 1351 removed the college to its present site near Trinity Hall, and called it the Hall of the Annunciation. In 1557 John Caius (*q.v.*) by royal charter re-founded the society under its existing name.

The three portals through which the college was entered were named by Caius the gates of Humility, Virtue or Wisdom, and Honour. The first-named gate, removed in 1868, is in the garden of the master's lodge. The much-admired Gate of Honour, leading into Senate House passage, was designed by Caius. The exterior of the chapel, built c. 1393, was cased with freestone in 1716-26. With the college are associated the names of William Harvey, John Cesi, Jeremy Taylor, Edward Thorlow, Thomas Gresham, E. H. Alderson, J. Hookham Frere, and John Venn. The society includes a master and 21 fellows on the older foundations.

Gonzaga. Name of a princely Italian family which ruled over Mantua from 1328 to 1708. Its members also held the marquise of Montferrat from 1536, and later the duchies of Guastalla and Nevers. It included many distinguished soldiers, notably Giovanni Francesco II (d. 1444); two cardinals, Ercole (1505-63), an active ecclesiastical reformer, and Scipione (1542-93), a patron of letters; and Luigi (1568-91), who was canonised as S. Aloysius.

Giovanni Francesco III (d. 1519), the husband of Isabella d'Este, was a soldier and a collector of art treasures. Under his son Federigo II (d. 1540) the court of Mantua was famous. A struggle between two branches of the family, the dukes of Nevers and Guastalla, for Mantua, France supporting the former, and Spain and Austria the latter, brought about civil war (1627-30).

The end came in 1708 when Ferdinand Charles IV was deposed by the emperor Joseph I, and died in exile without issue.

Austria then annexed Mantua and Savoy took Montferrat. The Guastalla branch of the family became extinct in 1746.

Gonzaga, THOMAZ ANTONIO (1744-1809). Portuguese poet. Born at Oporto, he was educated at the university of Coimbra, and in 1768 went to Brazil and became a judge at Villa Rica, in the prov. of Minas. In 1792 he was banished



Gonville and Caius College, Cambridge, with the Senate House on the left

to Mozambique on a charge of conspiracy. He wrote under the pseudonym of Morceu, and his lyrics, *Marilia de Dirceu*, enjoyed great popularity. They were edited, with a Life, by J. da Sylva, 1845.

Gonzalo de Berceo (c. 1198-1264). Spanish poet. A secular priest attached to the Benedictine monastery of San Millan de la Cogolla in the diocese of Calahorra, he became deacon in 1220. His latest and perhaps most polished work is the *Vida de Santa Oria*, Virgin. His poems and songs deal with religion.

Gooch, SIR DANIEL (1816-89). British engineer. Born at Bedlington, Aug. 16, 1816, he began life in



Sir Daniel Gooch, British engineer

some ironworks at Tredegar, and later became associated with the Stephensons and other pioneers in railway construction. His life work was done on the G.W.R. In 1837 he became its locomotive superintendent, and until 1864, when he left the company, he made remarkable improvements in its engines. In 1866 he returned to the G.W.R. as chairman, and holding this position for 23 years, brought the line from a position bordering on bankruptcy to a high pitch of prosperity. Gooch had much to do with laying the Atlantic cable. He was made a baronet in 1865, and died Oct. 15, 1889.

Goodall, FREDERICK (1822-1904). British artist. The son of an engraver, he was born Sept. 17, 1822. He



studied art and soon began to paint, exhibiting his first picture, *Card Players*, at the Royal Academy in 1839. In 1853 he was elected A.R.A. and in 1863 R.A. He died

Frederick Goodall

Elliott & Fry

July 28, 1904. Many of Goodall's best pictures have Egypt and the desert for their scene. They include *Hagar and Ishmael*, *Rachel and Her Flock*, *The Return from Mecca*, and *The Finding of Moses*.

Goodenough Medal. Prize founded in memory of Captain J. G. Goodenough, R.N., who died Aug. 20, 1875, from wounds inflicted with poisoned arrows by the natives of Santa Cruz. The fund consists of a sum of about £800, with the interest on which a gold medal is presented yearly to the sub-lieutenant who has taken a first-class in seamanship, and in the examination for lieutenant passes best in gunnery.



J. G. Goodenough,
British sailor

Good Friday (Gr. *Pascha Staurōsimon*, Pasch of the Cross; *paraskeuē*, Holy Friday; Lat. *dies absolutiois*). Name given in the R.C. and Anglican Churches to the Friday in Holy Week (*q.v.*) on which the Crucifixion is commemorated. In England, to which the name was for a long time peculiar, it superseded that of Long Friday, an allusion to the fast. The name pascha, afterwards appropriated to Easter (cf. Acts xii, 4, as given in A.V. and R.V.), derives from the association of the day with the time of the Jewish Passover.

In the Anglican Church special collects, epistle, gospel, lessons, and psalms are appointed for the day, which is frequently observed by the Three Hours service, from noon to 3 p.m., during which the attention of the congregation is specially directed to the Seven Last Words; it was for this service that Haydn's Last Words of the Redeemer were written. Among old English customs was that of the royal blessing of cramp-rings (*q.v.*) for prevention of the falling sickness.

In the R.C. Church the altar is at first bare, no candle is lighted, the officiating priests wear black vestments. After the altar has been covered with a white cloth and special prayers have been said, there follows The Adoration of the Cross. Communion is forbidden except in case of sickness. In the Roman Catholic and Greek Churches, for the ordinary Mass, the Mass of the Presanctified is substituted; in this the priest receives as communion a Host (*q.v.*) consecrated on the previous day. The Roman office known as *Tenebrae* (Lat., darkness) and observed on the Wednesday, Thursday, and Friday of Holy Week, is so called from the gradual extinction of the lights in the church during the service, in commemoration of the darkness that covered the earth at the time of the Crucifixion. For this office, which has been introduced of recent years into some Anglican churches, music has been composed by Palestrina, Salvatore, Michael Haydn, and others. In England and Ireland Good Friday is observed as a Sunday. See Easter.

Good Hope. British armoured cruiser of the Drake (*q.v.*) class. Originally named Africa, she was launched at Fairfield in 1899 and completed in 1902. In 1902 she was the largest ship of her class in the world, being 500 ft. long and 71 ft. in beam, with a displacement of 14,100 tons, a trial speed of 23.5 knots with engines of 30,100 h.p., and an armament of two 9.2-in., sixteen 6-in., and twelve 12-pounder guns. Her principal armour belt was 6 ins. thick.

From 1902-12 the Good Hope served almost continuously as a flagship of cruiser squadrons, and in the latter year went to the Mediterranean as flagship of the commander-in-chief, being transferred to the reserve in Nov. In Aug., 1914, she was commissioned for service as flagship of Rear-admiral C. Cradock, and on Nov. 1 following, in the action off Coronel (*q.v.*), she was sunk with all hands.

Good Hope, CAPE OF. Promontory of S. Africa. It is about 30 m. from Cape Town, and forms the S. extremity of Table Mountain. Its height is about 1,000 ft., and it forms a landmark. Owing to its importance in navigation it became

known as the Cape, and the southernmost part of S. Africa as Cape Colony. The prov. of the Cape of Good Hope is now the official name, but it is still spoken of as the Cape; Cape, not Good, being the dominant word. See Cape of Good Hope; Cape Colony.

Goodna. Town of Queensland, Australia, in Moreton West dist. It is a farming centre, on the road 20 m. S. of Brisbane. Pop. 2,167.

Good Parliament. Name given to the parliament that met in April, 1376. To reform the gross mismanagement of national affairs towards the end of the reign of Edward III, the Commons resolved to withhold all grants until their grievances were redressed. Through Sir Peter de la Mare, who thus founded the office of Speaker, they presented a list of petitions to the king, set up a council of 12 peers to advise the sovereign, and imprisoned and deprived of their lands two of his ministers, Lords Latimer and Lyons, who had been guilty of corruption and general malpractice. The parliament, which was dissolved July 6, 1376, holds an important place in the history of the constitution.

Goodrich, CASPER FREDERICK (b. 1847). American sailor. Born at Philadelphia, Jan. 7, 1847, he graduated from the U.S. naval academy in 1864 and saw service in the Civil War. In 1882 he commanded a detachment of sailors at Alexandria to police the burning city, and was naval attaché during the Tel-el-Kebir campaign. In 1884 he brought the Greeley relief ship Alert to New York. Member of the torpedo board 1884-85, inspector of ordnance 1886, he was promoted captain in 1897 and was president of the naval war college 1897-98. During the Spanish-American War he commanded the St. Louis and the Newark. Made a rear-admiral 1904, he was commander-in-chief of the Pacific squadron 1905-6, retiring in 1909.



Cape of Good Hope, the South African promontory named by early voyagers the Stormy Cape

Goodrich, SAMUEL GRISWOLD (1793-1860). American author. Born at Ridgefield, Connecticut, Aug. 19, 1793, he became editor of an annual, *The Token*, published at Boston, among the contributors to which were Nathaniel Hawthorne and Longfellow. Goodrich is best known by his pseudonym of Peter Parley, under which he published a large number of books for children on a wide variety of subjects. He died at New York, May 9, 1860.

Goodrich Castle. Ruined castle of Herefordshire. It stands on the right bank of the Wye, above the village of Goodrich, about 3 m. from Ross. The remains include a gateway and ruins of two towers, the keep, and the chapel. As a defence against the Welsh, there was a fortress here before the Norman Conquest, but the existing parts are of later date. The keep dates from the time of Henry II. It was once held by the earls of Pembroke, to which family it was given by Henry III; afterwards it passed to the Talbots, earls of Shrewsbury. It was held for Charles I during the Civil War, but after a siege lasting eighteen weeks the parliamentarians captured it in 1646, and dismantled it. There is an interesting old church in the village, near which is Goodrich Court, a modern residence formerly containing a noted collection of armour.

Good Templars, INDEPENDENT ORDER OF. Society for the purpose of inculcating total abstinence and abolishing the sale of alcoholic liquors. Founded in Utica, New York, in 1851, it spread rapidly in N. America, and in 1868 was introduced into Britain by Joseph Malins. The ritual, which is secret, and contains passwords and signs, was translated into 18 languages, and the society established lodges through the British colonies and in most European countries. Organized in lodges, the British headquarters are at Birmingham. In 1919 the international membership of the order was 620,000. See *Friendly Societies*.

Goodwill. Term used for the advantages, other than the material assets, buildings, furniture, etc., which go with a business or profession. It is regarded as property, and stamp duties must be paid when it is transferred from one person to another. It is also valued for death duties, and, moreover, a person is entitled to compensation if the goodwill of his business is injured. Lord Lindley defined goodwill as "the benefit arising from connexion and reputation," and its value "what can be got for the chance of being able to keep

that connexion and improve it." It frequently includes a name which, because it is known, has a commercial value. Professional goodwill usually means a recommendation of some kind of the purchaser by the seller to the clients, and an undertaking to refrain from competition.

Goodwin, THOMAS (1600-80). English puritan divine. He was born at Rollesby, Norfolk, Oct. 5, 1600, and educated at Cambridge, where he became a university preacher and lecturer at Trinity Church. Owing to disputes with his bishop, he resigned, and was for a time a pastor at Arnhem, Holland. Having returned to England in 1640, he preached with much success in London, and became a member of the Westminster Assembly three years later.

A friend and confidant of Oliver Cromwell, whose deathbed he attended, he preached many times before the House of Commons. From 1650, until the Restoration, when he was deprived of the office, he was president of Magdalen College, Oxford. Thence, after his death, Feb. 23,



Thomas Goodwin,
English divine

forward until his 1680, he was pastor of the independent church, Fetter Lane, London. His collected works, mainly sermons and expositions of Scripture, were reprinted, 1861-66.

Goodwin Sands. Dangerous sandbanks off the E. coast of Kent, England. They extend from N. to S. for 10 m., about 6 m. from the main-



Goodwin Sands. Chart of the dangerous sandbanks off the east coast of Kent, England

land. They form a natural protection to the anchorage of the Downs, but themselves have been the scene of many shipwrecks. At low water they rise some feet above sea level, while at high water they lie 15 ft. below the sea. The extreme limits of the shoal are marked by four light-vessels, whose flashing lights are visible at a distance of 12 m. The sands are named after Earl Godwin.

Goodwood. Sussex residence of the duke of Richmond and Gordon. It is 3½ m. N.E. of Chichester. The mansion was erected during the first half of the 18th century, and the grounds are celebrated for their magnificent cedars.

Goodwood Races. Horse-races held annually at the end of July. They extend over four days, be-



Goodwood Races. Finish of the Stewards' Cup, 1920, won by Western Wave



Goora Nut. Foliage, flowers, and seeds (also in section) of the African tree

ginning on a Tuesday. The course is situated on the Downs adjoining Goodwood Park. The meeting, inaugurated in 1802, is one of the principal society functions of the London season. See Horse Racing.

Good Words. English monthly illustrated religious magazine. Established in 1860 by Alexander Strahan, and published at 6d., its first editor was Norman Macleod, on whose death in 1872 Donald Macleod became editor. Its writers and illustrators included many eminent men and women. It later passed into the hands of Isbister and Co., from whom it was acquired by The Amalgamated Press, and issued as a penny weekly. In 1911 it was amalgamated with The Sunday Companion.

Goole. Market town, urban district, and seaport of Yorkshire (W.R.). It stands on the Ouse, just where it is joined by the Don, 25 m. S.W. of Hull, the two ports being under a joint port sanitary authority. It is served by the N.E. and L. & Y. Rlys., and has extensive modern docks. Steamers go from here to Hull, and to several ports of the European continent. Its industries include shipbuilding, engineering works, flour mills, chemical works, artificial manure manufactures, etc. Coal is its chief article of export. It is situated in a fine agricultural neighbourhood.

The principal building is the church of S. John; there is a free library and market hall. The council owns the gas and water undertakings. Goole owes its growth to the opening of a canal, part of the Aire and Calder Navigation system, in 1826. Pop. 20,330.

Goora Nut.

Seed of an evergreen tree (*Cola acuminata*), of the natural order Sterculiaceae. It is a native of tropical Africa. The tree is about 40 ft. high and has large, leathery, oblong leaves, pointed at each end, and sprays of pale yellow flowers. The seeds, about the size of horse chestnuts, are contained in pod-like follicles. They are used as a condiment, a small piece also being chewed before a meal to improve the flavour of the viands. Goora is said to make half-putrid water drinkable.

Goosander (*Mergus merganser*).

Diving duck. It visits the N. of Scotland, and occasionally breeds there. The male is black on the back and white beneath, with a greenish head, red beak, and pinkish breast, and is about 26 ins. long. In winter it migrates to Southern Europe and Asia. The name is probably an abbreviation of goose-gander, as merganser of Lat. *mergus*, diver; *anser*, goose.

Goose. Name applied rather indefinitely to include various genera of the order Anseres, which includes also ducks and swans. Some of these genera are so closely connected by intermediate forms with swans and ducks that it is difficult to indicate any clear line of demarcation. About 40 species are called geese; but the typical geese are usually restricted to eleven species. Broadly speaking, geese are smaller than swans, and



Goole, Yorkshire. The secondary school, founded 1876
Valentine

with certain exceptions, larger than ducks. Their necks are shorter than the body and their beaks are never longer than the head. They are heavy, strong birds, much less aquatic in habit than either ducks or swans. Of British wild geese, the grey lag (*Anser cinereus*) and the bean goose (*A. segetum*) are the best known, the former breeding in the N. of Scotland and Ireland. But in the main British wild geese



Goosander. Specimen of *Mergus castor*, a diving duck

are only winter visitors, retiring farther N. in spring for nesting purposes.

The domestic goose is descended from the grey lag, with which it will interbreed, and was evidently domesticated at a very early period,



Goose. Varieties of the wild and domesticated birds. Left to right, Emden goose; Toulouse goose, both domesticated; Bean goose, *Anser segetum*, a British wild species

as some of the oldest Sanskrit writings mention it, and an ancient Egyptian painting represents the cranning of a goose by hand. In Great Britain it has long been bred on a large scale, the common land being utilised for the purpose. Before steel pens were invented, goose quills were in great demand, but now are little used. The down is, however, still a valuable article of commerce.

The domestic goose has been greatly developed in size by selective breeding. Its ancestor, the grey lag, weighs about 8 lb., but a fine specimen of a good modern strain may scale 25 lb. As a producer of eggs the goose is unimportant, there being hardly any market for them. Of the various domestic strains, the Embden and the Toulouse are those usually kept. The former is the Michaelmas goose, while the latter is the favourite bird for Christmas, as it attains great weight. A tailor's goose is a flat iron used by tailors and so named from a resemblance of the handle to the neck of a goose. See Brent Goose; Poultry Farming.

Gooseberry. Fruit of a shrub of the natural order Grossulariaceae and genus *Ribes*. *R. grossularia* is the parent species, but varieties are numerous. The bushes should be planted in autumn or early spring, about 5 ft. apart every way, in ordinary soil, and in a sunny position. They should be freely pruned in July, all weak shoots being cut back. After fruiting, well-rotted manure should be applied to the surface of the ground in autumn, while, as a summer stimulant, weak solutions of sulphate of soda may be applied at intervals. Gooseberries are best propagated by autumn-struck cuttings, or by seeds from ripe fruit sown just underneath the surface of the soil.

Young bush plants should have a clear stem of 6 ins. to 12 ins. in height from which the buds have

been removed, to prevent the growth of suckers. Supposing the heads to consist of from three to six shoots, the ends of these should be shortened a little, soon after planting. The following season young shoots will be freely produced, and two should be allowed to grow from each original shoot to form the main branches of the head, the remainder being cut back. From nine to twelve main branches are sufficient to form the head, and they should be regulated so as to be about an equal distance apart, and allowed to grow 12 ins. each year until the bush is as large as desired. The head having been formed, no further training is required. See Fruit Farming.

Gooseberry Caterpillar. Name applied vaguely to the larvae of the magpie moth (*Abraxas grossulariata*) and a saw fly (*Nematus ribesii*). Both feed on the leaves of the gooseberry and do great damage in spring and early summer.

The sawfly larvae make their appearance soon after the leaves have expanded in the spring and, if not cleared off, soon destroy all the foliage. The caterpillars of the moth result from eggs laid in July or August, but as they go into hibernation before becoming full-grown, these also put in an early appearance. As both these insects are warningly coloured, in white, yellow, orange and black, birds do not molest them. Dusting the bushes with a mixture of soot and lime, or with powdered tobacco or hellebore, is recommended, but the safer method is to pick off the larvae by hand. In any case, dusting with hellebore or tobacco should not be resorted to after the fruit is formed, or these will become poisonous.

Goosefoots (*Chenopodium*). Genus of annual and perennial herbs. Of the natural order Chenopodiaceae, they are natives of all climates, mostly occurring on sea-shores or in cultivated land. Mostly weeds, some species are, or have been, used as pot-herbs, such as Good King Henry (*C. bonus-henricus*), used as a substitute for asparagus and spinach. *C. ambrosioides* of tropical America is the so-called Mexican-tea, whose essential oil causes it to be used as a tonic and anti-spasmodic medicine. *C. quinoa* is cultivated in Chile and Peru, its seeds being employed as food and medicinally.

Goose Land (Russ. Gusinaia Zemlia). South-western division of Novaia Zemlia. Situated on the W coast of the south island, it projects into the Arctic Ocean between N. and S. Goose capes. It is also known as Willoughby's Land.



Goose Step, as executed by the Prussian Guard

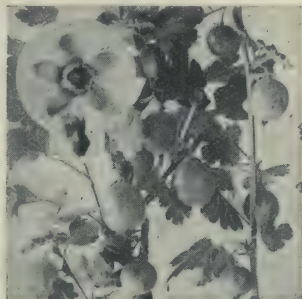
Goose Step. Popular name for a military exercise called the balance step. The body is balanced upon one leg, while the other is advanced without a jerk, the knee straight, the toe pointed out, and the shoulders square to the front. The advanced leg is then planted firmly on the ground, and the weight of the body thrown upon it, while the other leg is advanced in like manner, both knees being kept straight. This march is in slow time, i.e. 75 paces to the minute. This pace is practised for ceremonial parades, e.g. trooping the colour on the king's birthday. In the early days of the Great War, when the Germans were over-running Belgium and France, their troops frequently entered conquered towns of importance with the goose-step march. See Drill.

Gopeng Beds. Series of pale grey clays and boulder clays, developed in Kinta district, Malay Peninsula, and probably of Permian-Carboniferous age (g.v.). They contain tin ore, and are associated with granite, phyllite, quartzite, and crystalline limestone.

Gopher (*Geomys*). Genus of small rodents belonging to the squirrel family. The European gopher is known as the suslik, and is common in Central and Eastern Europe and Siberia. Its fossil remains have been found in the Thames valley. It somewhat resembles a squirrel without the tufted ears and long tail, and lives in burrows in which it hibernates during winter. It feeds



Gopher. The European species, also called the suslik



Gooseberry. Leaves and berries of the parent species. Inset, flower

upon seeds and roots, and occasionally upon birds and mammals.

Gopher Wood. Material of which, according to the Bible narrative, the ark built by Noah was constructed (Gen. vi, 14). The weight of authority favours its identification with the cypress (*q.v.*). The translators of the Bible leave the word in Hebrew.

Göppingen. Town of Germany, in Württemberg. Situated on the right bank of the Fils, it is 26 m. N.W. of Ulm. The town was largely rebuilt after a disastrous fire in 1782, and has woollen and metal manufactures and mineral springs. The principal building is the old castle erected by Duke Christopher in the 16th century, and possessing a fine spiral stone staircase known as the Traubenstiege (vine-stairway). Pop. 22,373.

Gopsall Hall. Residence in Leicestershire, long the seat of Earl Howe. It is 4 m. from Market Bosworth. It was built in the 18th century, and passed from Earl Howe, the admiral, to the Curzons, descendants of his daughter. It is



Gopsall Hall, the Leicestershire mansion, until 1918 the seat of Earl Howe

Schofield, Atherstone

noted for its Corinthian front, 180 ft. long with a portico, and until 1919 had a wonderful library, with many rare volumes, including some Shakespeares. The chapel is adorned with cedar wood from Lebanon. Handel resided here for some years. In 1918 the hall and estate were sold by Earl Howe.

Gorakhpur. City and district of the United Provinces, India, in Gorakhpur division. Area, 4,587 sq. m. Of the total area about three-quarters is under cultivation; of the cultivated area almost half is devoted to rice. Exports mainly consist of agricultural produce; the chief imports are piece-goods, salt, and metals. Area, division, 9,543 sq. m.; district, 4,528 sq. m. Pop., division, 6,524,419, $\frac{2}{3}$ Hindus; district, 3,201,180, $\frac{9}{10}$ Hindus; city, 48,358, $\frac{2}{3}$ Hindus, $\frac{1}{3}$ Mahomedans.

Goral. Ruminant mammal placed by zoologists between the goats and the antelopes. Found only in the Himalayas, it somewhat resembles a goat with very short horns and no beard. It stands about 27 ins. high at the shoulder, and is brown in colour with black stripes down the back and on the front of the legs. It is usually found in small herds.

Gorbals. Suburb of Glasgow, at one time a separate municipality. It is on the S. side of the Clyde, and is served by the Glasgow and S.W. Rly. Tramways also connect it with the centre of the city. The chief buildings are its parish church in Carlton Place, once a residential district, theatres, and the public library. The centre of the district, now one of the poorest and most crowded parts of Glasgow, is known as Gorbals Cross. Gorbals was a separate burgh until incorporated with Glasgow in 1846. See Glasgow.

Gorboduc. Tragedy by Thomas Sackville (afterwards earl of Dorset) and Thomas Norton. It was first acted by the gentlemen of the Inner Temple before Queen Elizabeth, Jan. 18, 1562. It is the earliest example of English tragedy. Gorboduc, king of Britain, divides the kingdom between his sons, whose quarrels lead to a general killing off of the characters. Printed in 1570 as *Ferrex and Porrex*, there is a modern edition by L. Toulmin Smith, 1883.

Gordian (Lat. *Gordianus*). Name of three Roman emperors, father, son, and grandson. Antonius Gordianus Africanus, a kinsman of the emperor Marcus Aurelius, after holding the offices of aedile, praetor, and consul, in A.D. 232 became proconsul of Africa. Having gained the affection of the inhabitants, he was invited to assume the throne by a body of rebels who had revolted against Maximinus (*q.v.*). This he did with great reluctance in 238, being then nearly 80 years of age. Duly recognized by the senate, he associated his son with him as joint-emperor. The governor of Mauretania, refused to recognize him as emperor, and in an engagement near Carthage the younger Gordian lost his life, whereupon the father committed suicide.



Goral. A Himalayan ruminant resembling a goat

After the brief joint reign of Balbinus (*q.v.*) and Pupienus (*q.v.*), which ended in the murder of both, the son of the younger Gordian, a boy of 12, was proclaimed emperor by the soldiery as Gordian III (238). He proved to be a capable general, but a succession of victories was cut short by his death. His successor in command, Marcus Julius Philippus, incited the soldiery against Gordian, and in a mutiny Gordian was murdered (244), Philippus being proclaimed emperor in his stead.

Gordian Knot. In Greek legend, a knot of bark made by Gordius, a Phrygian king, in fastening the pole to the yoke of a sacred wagon in the Acropolis of Gordium. An oracle declared that whoever should loose the knot would be ruler of Asia. Alexander the Great fulfilled the oracle by cutting the knot with his sword. "Cutting the Gordian knot" has become proverbial for prompt dealing with a baffling problem.

Gordium. Ancient city of Phrygia. It stands on the road between Pessinus and Ancyra near the Sangarius river. It was named after Gordius, a Phrygian peasant, who, according to tradition, became king of Phrygia. See Gordian Knot.

Gordon. Name of two war cemeteries in France where British soldiers who fell in the Great War are buried. One is N.N.E. of Kemmel, and the other is S. of Mametz. Four others bear the names of Gordon Castle, S.W. of Thiepval; Gordon Dump, E. of La Boisselle; Gordon Farm, and Gordon House, between the Menin Road and Zillebeke Lake. See War Graves.

Gordon. Name of a Scottish family. Strictly speaking, its head is the marquess of Huntly, another branch being represented by the marquess of Aberdeen, while the duke of Richmond is a Gordon in the female line. Aberdeenshire is their special area, but there are many others throughout Scotland,

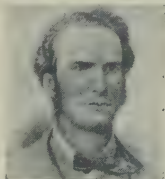
and many bearers of the name have distinguished themselves. It is perpetuated, moreover, by the Gordon Highlanders.

Gordon is supposed to be taken from Gorden, in Berwickshire, where a certain Norman settled in the 11th century, and took the name. His descendant, Adam Gordon, obtained from Robert Bruce, Strathbogie, in Aberdeenshire, the castle of which was long the family residence. He called this Huntly, after a place on his estate in Berwickshire. He was killed in battle in 1333. His lands in Berwickshire and Aberdeenshire passed down in the direct line until they came to Sir Adam Gordon, who had no sons. His daughter, Elizabeth, married Sir Alexander Seton, who then became lord of Gordon, their descendants taking the name of Gordon. From one of them, made earl of Huntly in 1450, come the earls and marquesses of Huntly.

A dukedom of Gordon was in existence from 1684 to 1836, being held by the marquesses of Huntly. The 4th marquess was created duke of Gordon in 1684; both he and his son, the 2nd duke, were Jacobites. The 3rd duke was the father of Lord George Gordon. Alexander, the 4th duke, was the husband of Jane Maxwell, the duchess of Gordon of whom many stories are told. Described as the greatest subject in the country, he was made earl of Norwich in 1784. His son George, the 3rd duke, who was known as a soldier, left no sons when he died in 1836, and the dukedom became extinct. His heiress, his sister, Charlotte, married the duke of Richmond, who took the additional name of Gordon, and in 1876 a later duke of Richmond was given the additional title of duke of Gordon.

Gordon Castle, near Fochabers, was the chief seat of the dukes of Gordon until their extinction. It is a large quadrangular building, built in the 18th century, and passed in 1836 to the duke of Richmond, who still owns it. See The House of Gordon, ed. J. M. Bullock, 1903.

Gordon, Adam Lindsay (1833-70). Australian poet. Born at Fayal, in the Azores, and educated at Cheltenham and Merton College, Oxford, he left England in 1853 for S. Australia, where he became successively trooper in the mounted police, horse-



A. Lindsay Gordon,
Australian poet



C. G. Gordon

breaker, livery-stable-keeper, and steeplechaser, and member of the House of Assembly.

In 1867 he published two volumes of poems, *Sea Spray* and *Smoke Drift*, and a dramatic lyric

Ashtaroth. *Bush Ballads* and *Galloping Rhymes* was published in 1870, and on June 24 of that year he shot himself at New Brighton, Melbourne, disappointment at failure to establish his claim to an estate in Scotland having aggravated a mental disturbance from which he had suffered throughout life. His collected poems were edited and published by Marcus Clarke, 1880, and have secured him a high place in the history of Australian literature. See *Memoir*, J. H. Ross, 1888.

Gordon, Charles George (1833-85). British soldier. Born at Woolwich, Jan. 28, 1833, he entered the Royal Engineers in 1852, served in the Crimean War in 1855, and took part in the Chinese expedition of 1860. After the peace, Gordon was allowed to assist the Chinese government in the suppression of the Taiping rebellion (1863-64), when his achievements won him the popular sobriquet of "Chinese" Gordon. In 1873 his services were lent to the khedive of



Charles George Gordon. The capture and murder of the general by the Mahdi's forces at Khartoum, Jan. 28, 1885. From the painting by Geo. W. Joy
By permission of Frost & Reed, Ltd., Art Publishers, Bristol & London, publishers of the etching

Egypt, Ismail, for the organization of the district known as the Egyptian Sudan. After a brief withdrawal, he returned thither in 1877 as governor, a position which he resigned in 1880.

Between 1880 and 1884 the Mahdi, a self-styled successor of the prophet, acquired a dangerous ascendancy over the fanatical Sudanese tribes. The Egyptian government was unable to re-establish its own authority, and the British government was not prepared to undertake the task of conquest. But the Egyptian garrisons at Suakin, Berber, Khartum, and elsewhere were not strong enough to maintain their positions unsupported, and the British government was induced to commission Gordon with the duty of withdrawing them, for which his unique knowledge of the Sudan and his immense personal influence marked him out. But when in 1884 he appeared on the scene, he at once formed the conclusion that it was the business of the Egyptian government to "smash the Mahdi" and recover the Sudan.

The Khartum Expedition

The result was that in March Gordon, without British troops, was shut up in Khartum, while the British government, believing that he could withdraw if he would, and feeling itself placed in a false position, resented demands for the dispatch of a relief expedition which it persisted in regarding as unnecessary. When the real need was realized it was still believed that the matter was not urgent, and months were wasted in the discussion of alternative routes before the expedition actually started in Oct. British troops advanced up the Nile; in Jan., 1885, the advance guard, after some sharp fighting, reached Metemmeh, 100 m. below Khartum, where it halted for four days and then made its dash to bring Gordon out—too late. When it arrived at Khartum on Jan. 28 it found that the Mahdi had rushed the defences two days before, and that Gordon was dead.

So fell a soldier of true heroic type, a medieval warrior saint, a puritan mystic in the midst of 19th century materialism; a man who lived by the Faith that can move mountains, doing whatsoever he did to the Glory of God, in the full conviction that he was an instrument in the hands of God, fearing nothing and doubting nothing; one who, left to himself, had repeatedly accomplished the apparently impossible chiefly through his extraordinary power of influencing others. In China he had led his troops to battle, himself armed

with nothing but a cane. Sudanese and Arabs had fallen under the spell of his personality. As an administrator dealing with uncivilized or half-civilized peoples, unhampered by the complex organization of political systems, he had been incomparable, though a very impracticable subordinate. When the public services had not demanded his time and energies, he had devoted them not to his own advancement but to the redemption of the waifs and strays of humanity. A national monument was erected to his memory in Trafalgar Square in 1888, and his family placed a cenotaph bearing a recumbent effigy of him in S. Paul's Cathedral. Other memorials are at Chatham, Rochester Cathedral, and Westminster Abbey, and his character and work are fitly commemorated in the Gordon Boys' Home (*q.v.*) for destitute lads.

A. D. INNES

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Gordon, LORD GEORGE (1751-93). Third son of the third duke of Gordon. Born in London, Dec.



George Gordon.

From an old print

26, 1751, he became a lieutenant in the navy, but resigned on being refused a ship. He entered Parliament in 1774 as member for Ludgershall, Wiltshire. In 1779 he was elected president of the Protestant Association for the repeal of the Catholic Relief Act of 1778, and in 1780 marched from St. George's Fields to the House of Commons at the head of an enormous mob to present a petition against the measure. (*See Gordon Riots.*)

Lord George was imprisoned in the Tower for eight months and tried for high treason, but was acquitted. In 1788, for libelling the British government and Marie Antoinette, he was imprisoned in Newgate, where he spent the rest of his life, solacing himself with dinners, balls, and music, especially

the bagpipes. In his later years he was a zealous Jew. He died in Newgate, Nov. 1, 1793.

Gordon, LUCIE DUFF- (1821-69). British author and translator. Born in Westminster, June 24,



Lucie Duff Gordon

After H. W. Phillips

1821, the only child of John Austen the jurist, in 1840 she married Sir Alexander Cornwall Duff-Gordon, Bart., and subsequently numbered among her friends Dickens, Thackeray, Tennyson, and Kinglake, her house in Queen Anne's Gate being famous as a centre of intellectual society. Latterly she lived in Egypt, dying at Cairo, July 14, 1869. Her chief works are Letters from Egypt, 1865, and a translation of Von Ranke's Ferdinand I, and Maximilian II of Austria, 1853.

Gordon, PATRICK (1635-99). Scottish soldier. He was born March 31, 1635, at Auchleuchries,

in Aberdeenshire, the younger son of a poor laird.

In 1651 he found his way to Poland, and during the next few years fought for the Swedes, the Poles, and the emperor, being always ready when taken prisoner to transfer his services to his last opponents. In 1661 he entered the service of Alexis, tsar of Russia.

On a visit to England in 1685 Gordon was requested by James II to settle permanently in England, but was unable to obtain permission to do so. Shortly after his return to Russia, circumstances brought Gordon into contact with the young tsar, Peter the Great, who conceived a great affection for him. Gordon repaid this favour by the part he played in the revolution which ended by establishing the tsar more firmly on the throne; while in 1698 he crushed the formidable revolt of the Strelitzes or household troops. He died at Moscow, Nov. 29, 1699. Passages from Gordon's Diary were printed for the Spalding Club in 1859.

Gordon Bennett Cup. Trophy instituted by James Gordon Bennett in 1899 for the encouragement of motor-racing. The races in connexion with it have taken place in



Patrick Gordon, Scottish soldier

various parts of the European continent, in the Isle of Man, and in America. In 1902 the cup was won by an Englishman, S. F. Edge, the race being run over the road from Paris to Innsbruck.

There is also a Gordon Bennett cup for an international air race, the first contest being held at Reims in 1909. The first post-war race took place in France on Sept. 28, 1920, being won by the French airman, Sadi-Lecointe.

Gordon Boys' Home, THE. British institution for the training of homeless and destitute boys. It is situated at West End, near Brookwood, Surrey. Erected as the national memorial to General Gordon after his death in 1885, it accommodates 250 boys, chosen from the homeless and destitute, between the ages of about 14 and 15½, and gives them training up to the age of 17 or thereabouts, which will fit them alike for civil life in Great Britain or its colonies, and for service in the army, navy, or mercantile marine.

To gain admission a boy must be really necessitous and free from such physical and mental infirmity as would disqualify him for service as stated above. Free admission is given to such number of boys as can be provided for out of the general income of the home. The lads, who are under military discipline, besides receiving their general education, are trained as engineers, tailors, shoemakers, carpenters, saddlers, clerks, bakers, and gardeners, while others, trained as musicians, are enlisted into the regimental bands.

During the Great War over 1,000 ex-pupils served in the various arms, 151 of whom were killed in action or died of wounds, 18 were promoted to commissions for service in the field, and 31 were presented with decorations or mentioned in despatches. A new school workshop is being erected as a memorial to those who fell in the war, part of the labour of which was provided by the pupils them-

selves. The offices are 5, York Street, St. James's, London, S.W. There are homes, run on similar lines, in other parts of England, e.g. Nottingham.

Gordon - Cumming, ROULEYN GEORGE (1820-66). British traveller and big game hunter.



R. G. Gordon-Cumming, British traveller

Born March 15, 1820, and educated at Eton, he went for a short period to India, where he served in the Madras Light Cavalry. Returning to Scotland, he afterwards embarked on a hunting expedition in Bechuanaland and the Limpopo valley, an account of which he has given in *Five Years of a Hunter's Life in the Far Interior of South Africa*, 1850. The lion hunter, as he was called, died at Fort Augustus, Inverness-shire, March 25, 1866.

Constance Frederica Gordon-Cumming (b. 1837), a sister of the above, was a well-known traveller, who recorded her experiences in a series of books that enjoyed considerable popularity.

Gordon Highlanders. Regiment of the British army. It was raised in 1788, when Colonel Robert



Gordon Highlanders' badge

Abercromby gathered a body of young highlanders together. In 1790 they proceeded to India, where they remained until 1804, showing great gallantry at the siege of Seringapatam. Soon they became the 75th regiment of the line and, later, the 1st battalion of the Gordon Highlanders. In 1794 the duke of Gordon raised a regiment of highlanders from among his tenants in Aberdeenshire. In his honour they were called the Gordon Highlanders, and became, later, the 2nd battalion of that regiment, and the 92nd of the line.

The Gordons were in Holland in 1799 and distinguished themselves in Egypt in 1801. They fought under Sir John Moore at Corunna, and under Wellington

at Vittoria and in the Pyrenees. At Quatre Bras the 92nd drove the French from their positions, and at Waterloo routed a solid column of French infantry and captured 2,000 prisoners. It was on this occasion that the Gordons seized the stirrups of the Scots Greys and, shouting "Scotland for Ever!" ran with the cavalry towards the foe.

The Gordons took part in quelling the Indian Mutiny, marched with Lord Roberts from Kabul to Kandahar, led the way across the Egyptian trenches at Tel-el-Kebir, and in the Chitral campaign helped to storm the Malakand Pass. They won fresh glories at Dargai, while in the S. African War the 2nd battalion was among the defenders of Ladysmith, and the 1st fought at Magersfontein and at Paardeberg. In the Great War the 1st battalion were in the retreat from Mons, the 2nd at the first battle of Ypres, also, with the 6th battalion (Territorial), at Neuve Chapelle, 1915. The Gordons fought at Festubert and Loos, 1915, at Arras, 1917, and in many other leading battles. The 4th Gordons, attached to the 51st division, took a leading part in the capture of Farners, the last battle of the Great War in which that division participated. The regimental depot is at Aberdeen.

Gordon Riots. Disturbances which took place in London in June, 1780. In that year Sir George Savile introduced a bill to enable Roman Catholics who abjured the temporal sovereignty of the pope to purchase and inherit land; the bill also proposed to give a certain liberty to their priests. It became law as regards England, but a proposal to extend it to Scotland was violently opposed and was abandoned.

In England certain Protestants formed an association to work for the repeal of the Act. Lord George Gordon (*q.v.*) took the lead, and at the head of about 60,000 people marched with a petition to Westminster on June 2. They forced peers and members of Parliament to shout No Popery, and to wear blue cockades, made their way into the lobbies of the Houses of Parliament, and when the military arrived wrecked the chapels attached to the Bavarian and Sardinian embassies. On the 4th they renewed their attacks, and soon had a good part of London at their mercy. Prisons were broken open, numerous fires were started, and the Bank of England was attacked. On the 7th George III called a meeting of his ministers, and when they hesitated he himself ordered the military to act. The riots were



Gordon Boys' Home. The boys drilling in front of the West End Home, near Brookwood



Gordon Riots. Troops of the Honourable Artillery Company firing on rioters looting a house in Broad Street, City, June 7, 1780. Surgeon Sir William Blizard is seen tending wounded in the foreground

From a picture by F. Wheatley

suppressed, and the leaders brought to trial. Twenty-one were executed, but Gordon was acquitted. In Barnaby Rudge Dickens gives a vivid picture of these riots.

Gore. Prov. of S.W. Abyssinia. Bounded on the W. by the Anglo-Egyptian Sudan, it is mountainous, and is inhabited by Gallas. Gore, the capital, is a town of 3,500 inhabitants.

Gore, ARTHUR WENTWORTH (b. 1868). English lawn-tennis player. Born at Lyndhurst, Hants, Jan. 2, 1868, he was captain of the first international team, England v. America, 1900, and played in Internationals, 1906, 1907, 1912, and 1913. He was champion of England, 1901, 1908, and 1909 (also Doubles with H. R. Barrett), and champion of Scotland in 1892.

Gore, CHARLES (b. 1853). British prelate. Born Jan. 22, 1853, he was a son of Hon. C. A. Gore and a nephew of the 4th earl of Arran. Educated at Harrow and Balliol College, Oxford, he was elected fellow of Trinity College, and was ordained. In 1880 he went to Cuddesdon as vice-principal of the college there; becoming in 1884 first head of Pusey House, Oxford.



Charles Gore,
British prelate
Russell

For nine years he was an influential figure in Oxford, his main work being to permeate the High Church movement with the results of modern Biblical criticism. This led to certain difficulties and controversies, especially after the publication of *Lux Mundi*, 1890.

In 1893 he left Oxford to become vicar of Radley, and in 1894 he was made canon of Westminster. In 1902 Gore was chosen bishop of Worcester, where he worked hard to found the new diocese of Birmingham, of which in 1905 he became the first bishop. In 1911 he was translated to Oxford, where he remained until his resignation in 1919.

He founded the Community of the Resurrection at Mirfield; and wrote numerous theological and expository works on which rests his high reputation as a theologian. An able preacher, he was also distinguished for his active sympathy with socialistic and humanitarian ideas and movements.

Gore, GEORGE (1826-1908). British physicist. Born at Bristol, Jan. 22, 1826, at an early age he became interested in electro-metalurgy and electro-chemistry. Elected F.R.S. in 1865, his discoveries established his reputation. His principal works are *The Art of Scientific Discovery*, 1878; *The Scientific Basis of Morality*, 1882; and *The Art of Electro-Metallurgy*, 1877. He died Dec. 23, 1908.

Gorée. Small island off the French colony of Senegal. It is situated S.E. of Cape Verde, and forms one of the four communes which send a representative to the French parliament. It has a fortified harbour and exports wax, gold-dust, and ivory. Pop. 1,140, of whom 45 are Europeans.

Gorell, JOHN GORELL BARNES, 1st BARON (1848-1913). British lawyer. Born May 16, 1848, he was educated at Cambridge, and was called to the bar in 1876. He was made a Q.C. in 1888, and became one of the foremost advocates of his time. He was raised to the

bench in 1892 as judge of the probate, divorce, and admiralty division, becoming president of that

court in 1905, and retiring in 1908. He died April 22, 1913. He was succeeded by his elder son, Henry, who was killed in action in the Great War, 1917. His second son, Ronald Gorell Barnes (b. 1884), 3rd baron, also served in the Great War, being capt. and adjutant of 7th batt. of the Rifle Brigade, 1916, maj.-gen. on the staff, 1918, and deputy-director of staff duties (Education) at War Office, Aug., 1918. See John Gorell Barnes, First Lord Gorell, J. E. G. de Montmorency, 1920.

Gorgas, WILLIAM CRAWFORD (1854-1920). American surgeon. Born Oct. 3, 1854, he studied



William C. Gorgas,
American surgeon

medicine, and in 1880 was appointed an army surgeon. Rising to the rank of major-surgeon in 1893, he was sent as chief medical officer to Havana. Here he completely stamped out the yellow fever, and when chief sanitary officer for the Panama Canal, 1904-13, saved thousands of lives in the unhealthy districts. In recognition of this he was promoted surgeon-general in 1914. On the entry of the U.S.A. into the Great War he organized the army medical service, and visited France in 1918. He died in London, July 4, 1920.

Gorge. Narrow valley of greater depth than width, usually with steep sides. Formed by the cutting power of running water, it marks the course where a stream is or has been. The most perfect example is the Grand Cañon of Colorado river, 6,000 ft. in its deepest part, with sides nearly perpendicular, their steepness being due to absence of rainfall. In England gorges are found in carboniferous limestone, e.g. on the Avon at Clifton. See Cañon; Colorado.

Gorge (late Lat. *gorga*, gullet, narrow pass). Military term used to indicate that face of a fortification or entrenched work which is least prepared to withstand a frontal attack or fire. See Fortification.



1st Baron Gorell,
British lawyer

Elliott & Fry

Görgei or **GÖRGEY**, **ARTHUR** (1818-1916). Hungarian soldier. Born at Toporez, Jan. 30, 1818, he



Arthur Görgei,
Hungarian soldier

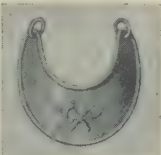
came into prominence in the Hungarian rising against the Austrians in 1848. He achieved some signal successes, notably at Ozora (Oct. 7), where he forced the capitulation of 10,000 Croats, but found himself unable to work with Dembinski, the commander-in-chief, and was in fact accused of losing the battle of Kopolna by arriving late.

Subsequently Görgei himself was given the chief command, and almost cleared Hungary of the Austrians. Fatal delays were caused, however, by his dissensions with Kossuth, the dictator, and his government. A Russian army came to the help of the Austrians, and Görgei was compelled to surrender near Világos on Aug. 13, 1849. For this he was accused of treachery, a charge of which he was cleared in 1885. He died in May 1916.

Gorges, **SIR FERDINANDO** (c. 1566-1647). British adventurer. Born in Somerset, he became a soldier and saw a good deal of service. He fought against the Spanish armada and in France for Henry IV; went on an expedition with Essex, with whose rebellion he was associated, and served in Ireland. In 1596, having been knighted, Gorges was made governor of Plymouth, and there he shared in the early plans for settling colonists in America. A member of the Plymouth Company, he frequently sent out ships and colonists to the New World, in which he had obtained grants of land. The most considerable of these was one of 1639, making him lord of Maine, of which state he is regarded as the founder. In 1647, too old to serve the king in the Civil War, he died at Long Ashton, Somerset. *Pron.* Gor-jez.

Gorget (Fr. *gorge*, throat). In armour, a metal covering for the throat, protecting the gap between the breastplate and helmet. In the ornate armour of the 16th century the gorget

was often richly embossed. It was the last remnant of body armour worn by infantry in England, and, reduced to



Gorget: armour to
protect the throat

a crescent-shaped ornament, was long worn by officers to denote that they were on duty. *See* Armour.

Gorgias (c. 475-390 B.C.). Greek philosopher and sophist. Born at Leontini, in Sicily, he came to Athens in 427 to plead the cause of his native town against Syracuse. Primarily a teacher of rhetoric, in which he introduced a number of innovations, unfamiliar words, and rhetorical figures, he also wrote a treatise *On Nature*, which is entirely lost. In this he maintained that nothing really existed; that if it did exist it could not be known; and that even if it could be known it could not be communicated.

Gorgias is one of the chief interlocutors in the *Dialogue of Plato* which bears his name. The authenticity of two extant speeches—*An Apology for Palamedes* and *An Encomium of Helen*—attributed to him is disputed. *See* Sophists.

Gorgons. In Greek mythology, three monsters named Stheno, Euryalé and Medusa, who dwelt in Libya. In stead of hair, their heads were covered with crawling serpents, and they had the property of turning into stone anyone who looked upon them. Medusa, who alone was mortal, was killed by Perseus, who struck off her head, looking at her reflection in a mirror while he did so, in order to avoid being turned into stone. Perseus presented the head to Athena, who set it in the middle of her shield. Similarly, the Chinese and other Oriental nations decorated their shields with frightful figures, to terrify the enemy. Later, the Gorgons were represented in art as beautiful maidens. Probably personifications of the flashing lightning, the rationalists explained them as a race of hideous women. Their sisters, the Graeae, personifying old age, had the form of swans and only one eye and tooth between them. *See* Medusa; Perseus.

Gorgonzola. Town of Italy, in the prov. of Milan. It is 12 m. N.E. of Milan, with which it is connected by a steam tramway. It is engaged in the silk industry, but is best known for its cheese, which is widely exported. Pop. 5,198. *See* Cheese.

Gorham, **GEORGE CORNELIUS** (1787-1857). Anglican clergyman. Born at St. Neots, and educated

at Queens' College, Cambridge, of which he became fellow, he was ordained in 1811. On his appointment in 1847 to the living of Bramford Speke, the bishop of Exeter refused to institute him on the ground that his views on baptism were not those of the Church of England. This led to a series of law suits, which ended in the judicial committee of the privy council deciding that his views were not incompatible with orthodoxy. As the bishop proved immovable, he was finally instituted by the archbishop of Canterbury in 1851, and held the living until his death, June 19, 1857.



Gorhambury, Hertfordshire. Ruins of the house built in 1563, later occupied by Francis Bacon

Gorhambury. Hertfordshire seat of the earl of Verulam. It is 2 m. W. of St. Albans. The mansion, standing in a fine park, was built 1778-85, includes much later work, and is notable for its hall and pictures. In the grounds are ruins of the house in which Francis Bacon lived in almost regal state. The manor originally belonged to the abey of St. Albans, was granted by Henry VIII to Ralph Rowley and then to John Maynard. It was bought in 1550 by Nicholas Bacon and, after the death of his son Francis, 1626, descended to the latter's cousin Sir Thomas Meautys, whose widow married Sir Harbottle Grimston, Bart., speaker of the Restoration parliament.

Gori. Town of Georgia, Transcaucasia, in the govt. of Tiflis. It stands on the river Kura and the Poti-Tiflis Rly., 48 m. N.W. of Tiflis. The chief occupations are the cultivation of fruit and vines, cattle-rearing, and the manufacture of cotton and woollen goods. Gori was formerly the residence of the princes of Karthli (Georgia). Pop. 11,000.

Gorilla. Largest of the anthropoid or manlike apes, but not so nearly related to the human genus as the chimpanzee. It is found only in Western Equatorial Africa, where it inhabits the forests. A



Gorilla. The man-like ape of the African forests

fine male may attain a height of slightly over 6 ft., but the female seldom exceeds 4½ ft.

The gorilla is distinguished from the chimpanzee (*q.v.*) by its greater size, larger teeth, heavy brow ridges over the eyes, and great length of the arms—the hands reaching well below the knees when the animal stands erect. The adult animal has also a more savage and bestial look. In bulk and in length of limbs the full-grown gorilla much exceeds an average man. The colour is black, though some specimens show a slightly reddish tinge on the head and shoulders, and the body is covered with coarse hair.

The hands are wider and stouter than those of the chimpanzee, and the fingers are partly united by a strong web of skin, while the thumb is short and of little use as an opposable member. On the other hand, the great toe is remarkably developed, and the foot is a powerful grasping instrument. Owing to the shyness and wariness of the gorilla, and its habitat in the densest forests, little is known as yet of its mode of life. The animals appear to have some kind of family life, the male and female being found with young ones of various ages, but it is doubtful whether they have any permanent home.

So far as is known, the gorilla in its wild state lives on fruit and roots, possibly varying its diet with eggs and young birds, and it has sometimes proved troublesome by robbing plantations.

The gorilla, like the chimpanzee and the orang-utan, does not habitually walk erect, but supports itself with its hands, which are usually partly closed so that the weight is borne on the knuckles. In the trees these animals progress with surprising speed and agility, and can

take long leaps that would appear impossible for such heavily-built animals. Owing to its great muscular development and savage disposition, it is a very formidable opponent when brought to bay, but the stories of aggression on its part appear to be ill-founded. It rather avoids encounter with man, and makes off with great speed on his approach.

All attempts to keep the gorilla in captivity for any length of time have hitherto failed. Very young specimens exhibit some docility for a time, but soon mope and die. Adults are quite untamable and unmanageable, and quickly die in captivity. Some six gorillas have been kept in the London Zoological Gardens, but none of them lived for more than a few months. *See* Monkey.

Gorinchem or GORKUM. Town of the Netherlands, in the prov. of S. Holland. It stands on the Merwede at the inflow of the Linge, 22 m. E.S.E. of Rotterdam. The town is picturesque, with 17th century gateways and brick and stone houses decorated with mosaic work. It has an excellent harbour, and carries on a trade in cattle, cereals, and hemp, while its salmon fisheries are important.

The Merwede canal communicates with Amsterdam. A few miles below Gorinchem begins the Biesbosch, a district 40 m. in area, which was overwhelmed by a flood in 1421, when over 70 market towns and villages were wiped out, with death-roll exceeding 100,000. The district has since been reclaimed. Gorinchem was the first city taken by the Water Gueux (Beggars), the allies who helped the Dutch by sea, from the Spaniards in 1572. Pop. 12,053.

Goring. Village and parish of Oxfordshire. It is on the Thames, opposite Streatley, on the Berkshire side of the river, 9 m. N.W. of Reading. For the two there is a station on the G.W. Rly. It is a boating centre, being also visited by anglers. There is a church with a Norman tower and formerly there was a nunnery here. It lies amid beautiful scenery and gives its name to the gap between the Chilterns and the Marlborough Downs through which the Thames flows. Here Icknield Street (*q.v.*) crossed the river. Pop. 1,785.

Goring Heath is a village 3½ m.

away. Another Goring is a village on the Sussex coast, 2½ m. W. of Worthing.

Goring, GEORGE GORING, LORD (1603-57). English royalist. Son of George Goring, earl of Norwich, he was born July 14, 1608. As a soldier, he gained his early experience in the Dutch service, before being made governor of Portsmouth in 1639. He served Charles I in the short wars against the Scots and was one of those who suggested to the king the idea of using the army to overawe the parliament. This army plot was betrayed by him, but when war began he was found on the side of the king.

Having surrendered Portsmouth, he went to the Netherlands to raise soldiers, and then had a command in Yorkshire. He was taken prisoner at Wakefield, but was again free when Marston Moor was fought, and there commanded a wing. After this Goring held a command in the W. of England, where the plunderings of his troops made him hated. He shared in the campaign that culminated in the defeat at Naseby, and was himself crushed at Langport in July, 1645, and he passed the rest of his days in France and Spain. He commanded some English troops in Spain, where he died.

Gorizia. Town of Italy, formerly capital of the Austro-Hungarian crownland of Görz and Gradisca. It is picturesquely placed on the Isonzo, 23 m. N. N. W. of Trieste, and is dominated by an eminence which is crowned by the ancient stronghold of the



Lord George Goring, English royalist
After Van Dyck



Gorizia arms
the ancient stronghold of the



Goring, Oxfordshire. The Thames, with the village beyond, from Streatley

Counts of Görz, used in modern times as barracks. The old part of the town is enclosed in a triple shield of walls, and the new town is fast developing into a popular winter resort. The most noteworthy buildings are the 17th century cathedral, the municipal offices, the archbishop's palace, the college of the Jesuits, and the house of the provincial diet. The inhabitants are mainly engaged in the weaving industries—cotton and silk—and in the manufacture of leather articles, liqueurs, pottery, paper, candles, and soap. There is trade in fruit and wine. Pop. 30,995.

Gorizia was one of Italy's most important objectives in the Great War, as it was a strategic centre barring the way to Trieste, the ultimate objective. In their offensives on the Isonzo in July, 1915, the Italians made but little head-

Austrian front from Sabotino, on the W. side of the Isonzo, and N.W. of Gorizia, to San Michele, in the Carso, on the E. side of the river, and S.W. of the town. Connected with Sabotino were the Oslavia hills and Podgora; in former attempts the Italians had been held up.

On Aug. 6, however, they carried all the Austrian positions protecting Gorizia, and in the evening were less than $\frac{1}{2}$ m. from the bank of the river. They also took Monte Calvaria, and as night fell were attacking the last Austrian trenches between the southern slope of Podgora and the Isonzo. On Aug. 6-7 they stormed San Michele, thus securing the two bastions which had defended Gorizia N. and S. On Aug. 8 they captured the level space on the W. bank, and in the failing light some of their troops waded across and entrenched on the E. bank. Meanwhile bridges were got ready, and in the morning of Aug. 9 the main force passed over and occupied Gorizia. Its capture had important effects, enabling the Italians to silence the Austrian positions on Monte San Gabriele. This relieved the pressure on the Italians holding river crossings, especially the bridge at Gorizia.

Gorkum. Alternative name of the Dutch town of Gorinchem (*q.v.*)

Gorky, MAXIM (b.1869). Russian author. He was born at Nijni Novgorod, Mar. 14, 1869, his real name being Alexi Maximovich Pyeshkov. His father died when he was four years of age, and his mother shortly after re-married. The boy was brought up by his maternal grandfather,

but after a few months' schooling was apprenticed to a cobbler, and two months later to a draughtsman, from whom he ran away; then, after being assistant to an ironmaker, he became help to the cook on a Volga steamer, who inspired him with a liking for reading.

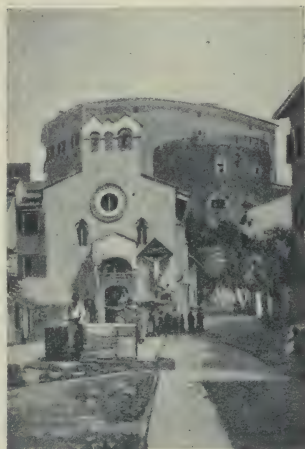
At the age of 16 Gorky, failing to secure education at Kazan University, entered a biscuit factory, afterwards working at anything that offered. In 1888 he tried to commit suicide, and on recovery resumed that vagabond life which later provided him with almost inexhaustible material for his pen. In 1892 his first story, Makar Chudra, appeared in a Tiflis journal. In 1893 V. G. Korolenko encouraged him to write. Chelkash, 1893, and other short stories were rapidly produced, and the young author became immediately popular. Fomá Gordeyev, 1900 (Eng. trans. 1901), his first novel, though marked by fine descriptions of scenery of the Volga, and by remarkable character drawing, was on the whole disappointing.

In 1901 began appearing a collection of Gorky's tales, his position being then recognized as that of the most popular of Russian authors. Many volumes of these tales appeared in English translations. His play, The Lower Depths, was produced in London in 1903. He suffered imprisonment in 1905 as a sympathiser with the revolutionaries.

On the outbreak of the Great War he volunteered for service with the Russian Red Cross, and after the revolution became president of a committee for safeguarding artistic property. He later threw in his lot with the Bolsheviks, and was engaged in propaganda work, but definitely severed his connexion with them in 1920. See Maxim Gorky, His Life and Writings, E. J. Dillon, 1902.

Gorleston. Parish and watering place of Norfolk, England. It is part of the borough of Great Yarmouth, 122 m. N.E. of London, and is reached by the G.E. Rly. Standing at the mouth of the Yare, it has good sands, in addition to a pier and other attractions for visitors. Electric trams connect it with Yarmouth proper, and steamers go from here to Lowestoft. See Yarmouth.

Gorlice, GORLITZ OR GORLITSE. Town of Poland, formerly in Galicia. It is about 25 m. S.E. of Tarnov and 17 m. S.W. of Jaslo, among the foothills of the Carpathians. It has naphtha works and a trade in grain and wine. It was



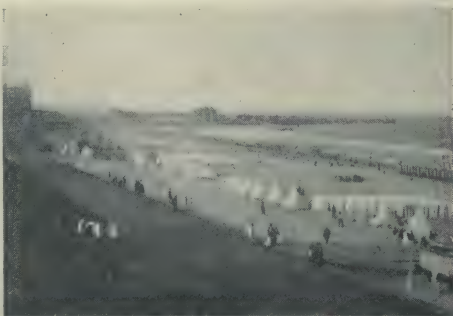
Gorizia, Italy. The old fortress of the counts of Görz on the Castle Hill overlooking the town

way towards the town, and it was not until Aug. 8, 1916, that it was captured by the Third Army, under the duke of Aosta. In the great Austro-German offensive of the autumn of 1917 Gorizia was abandoned by the Italians, Oct. 28, but recovered in the autumn of 1918. It suffered greatly from bombardments. See Isonzo, Battles of the.

Gorizia; CAPTURE OF. Italian success against Austria, Aug. 1916. On Aug. 6 there was an intense bombardment of the



Maxim Gorky, Russian author



Gorleston, Norfolk. View of the town and sea front from the south

very prominent in the Great War in the campaigns fought between the Russians and Austro-Germans in Galicia and in the Carpathians. In Dec., 1914, the Russians advancing south from it carried a strong position in the mountains at Konieczuka. It was abandoned by the Russians in their retreat from the Donajetz to the San, and occupied by the enemy, May 2, 1915. It was again prominent in the fighting in this region in 1916. Pop. 6,500. See Carpathians, Campaigns in the; San, Battle of the.

Görlitz. Town of Germany, in Silesia. Situated on the Neisse, 27 m. by rly. E. of Bautzen on the line from Dresden to Breslau, it has large cloth factories and machinery works. A great bastion, the Kaisertrutz (1490), and other traces of the old fortifications remain. The principal church is that of S. Peter and S. Paul, containing a copy of the Holy Sepulchre at Jerusalem. The Rathaus, built early in the 14th century and restored 1874-75, has a tower erected 1509-13, bearing the arms of Matthew Corvinus, king of Hungary, and a balcony of rather later date. The town park, which includes a botanical garden, contains a statue to Jakob Boehme, the mystic, who was buried in the cemetery at the N. of the town. The railway to Kohlfurt crosses the valley of the Neisse by a viaduct on 34 arches with a length of over 500 yds. and a height of 115 ft. Pop. 85,806.

Görlitz came into prominence in 1850 by reason of a famous murder trial held at Darmstadt. In 1847 the countess of Görlitz was strangled by one of her men-servants, and her burned corpse was discovered a few hours later. After two years' investigation the trial took place, and aroused great interest because of the theory of spontaneous combustion which was then raised. The physician Von Siebold, who supported the theory as a scientific possibility, was opposed by the chemists Bischoff and Liebig.

Gormanston, Viscount. Irish title borne since 1478 by the family of Preston. A Lancashire man, Sir Robert de Preston, made lord chancellor of Ireland and an Irish baron, began the long connexion of his family with that country. His descendant, another Sir Robert, was made Viscount Gormanston, in co. Dublin, in 1478. The title, the premier Irish viscounty, passed down to his descendants, most of them taking a leading part in Irish affairs, until it came to Jenico, the 7th viscount. Adhering to James II, he was deprived of his honours and outlawed in 1691, and the title

was not officially recognized until 1800, when another Jenico was allowed to take his seat in the Irish House of Lords as the 12th viscount. Edward, the 13th viscount, was made a baron of the United Kingdom in 1868. In 1907 Jenico became the 15th viscount. The family estates are in counties Dublin and Meath.

Görnergrat. Rocky ridge of the Pennine Alps, Switzerland, in the canton of Valais. It forms part of the Rifflberg, 3½ m. S.E. of Zermatt, with which it communicates by a mountain rly. Alt. 10,289 ft. The summit commands a panorama of the Monte Rosa-Breithorn-Matterhorn group.

Goroblagodat. Mining district of the Urals, E. Russia, in the govt. of Perm. It is 127 m. N.E. of Perm, and contains numerous foundries, ironworks, gold and platinum mines, and quarries.

Görres, JOHANN JOSEF (1776-1848). German publicist. Born at Coblenz, Jan. 25, 1776, he graduated at Bonn and soon became an ardent revolutionary. Teaching physics at Coblenz from 1800-6, he then moved to Heidelberg, returned to his native town in 1808, embroiled himself in political schemes, and was compelled to take refuge from the authorities in Switzerland. In 1826 he returned and was appointed professor of history at Munich University, remaining there until his death, Jan. 27, 1848. Die Kristliche Mystik, 1836-42, was his chief work.

Gorringe, SIR GEORGE FREDERICK (b. 1868). British soldier. Born at Southwick, Sussex, Feb.



Sir G. F. Gorringe,
British soldier

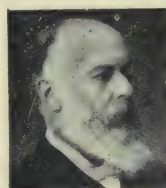
Russell

10, 1868, he entered the Royal Engineers in 1888, and afterwards saw much service with the Egyptian army, winning the D.S.O. in the Dongola campaign, 1896, and actively participating in the Khartum expedition 1897-98. He was specially employed in charge of the reconstruction of Khartum, 1899. He took part in the S. African War, being A.D.C. to Lord Kitchener and D.A.A.G. of the headquarters staff, and commanded a flying column in Cape Colony in 1901. He commanded in the operations in Southern Senar, 1904, was director of movements and quartering at the War Office, 1906-9, and brig.-gen. commanding the 18th infantry brigade, 1909-11. In 1912 he went to India to command the Bombay brigade.

During the Great War Gorringe's name was very prominent in connexion with the campaign in Mesopotamia. He commanded the 12th Indian division and captured Nasiriyeh, July 25, 1915, and was chief of the staff of the Tigris force Jan.-March, 1916, and succeeded Aylmer in the command of the Kut relief force in April, 1916. In 1917-18 he was engaged in France. He was promoted maj.-gen. 1911, temp. lieut.-gen. Mar., 1916, created K.C.B. in 1915, and K.C.M.G. in 1918. See Kut; Mesopotamia, Conquest of.

Gorse. Alternative name for the prickly evergreen shrub also known as furze (*q.v.*).

Gorst, SIR JOHN ELDON (1835-1916). British politician. Born at Preston, May 24, 1835, and educated at the grammar school and S. John's College, Cambridge, he went in 1859 to New Zealand, where he became civil commissioner in Wai-kato. Returning to England, he was called to the bar in 1865. He



John Elford
Russell

entered the House of Commons in 1866 as member for the borough of Cambridge and sat for Chatham, 1875-92, and for Cambridge University, 1892-1906. He was a member of the Fourth Party (*q.v.*).

Gorst was knighted in 1885, was solicitor-general in 1885-86, under-secretary for India from 1886-91, financial secretary to the treasury, 1891-92, and vice-president of the committee of the council on education from 1895 to 1902. He took a keen interest in labour and social questions, and in 1890 was British plenipotentiary at the labour conference in Berlin. He died in London, April 4, 1916. His elder son, Sir Eldon Gost (d. 1911), succeeded Cromer in 1907 as British agent and consul-general in Egypt.

Gort, Viscount. Irish title borne since 1816 by the families of Prendergast and Vereker. Sir Thomas Prendergast, a soldier, M.P. and baronet, was killed at Malplaquet in 1709 and from his son his estates in Monaghan passed to a grandson, John Smyth, also an Irish M.P. He



6th Viscount Gort,
British soldier

Bassano

took the name of Prendergast; in 1810 was made a baron, and in 1816 a viscount. To these dignities his nephew, Charles Vereker, succeeded, and from him the present viscount is descended. John Standish Surtees Prendergast, 6th viscount (b. 1886), won distinction in the Great War. Serving with the Grenadier Guards, he won the M.C., D.S.O. and bar, and the V.C., Sept. 27, 1918.

Gortchakov, PRINCE ALEXANDER MIKHAILOVITCH (1798-1883). Russian diplomatist. Born July

16, 1798, he entered the diplomatic service and became secretary at the embassy in London in 1824. After holding various posts he was appointed ambassador to the German Bundestag in 1850. Thence he was transferred to Vienna, 1854-56, in the latter year succeeding Nesselrode as foreign minister to Alexander II, and in 1863 became chancellor of the empire. His policy was at first strongly pro-Prussian, but later he began to distrust Bismarck, a feeling increased by Germany's attitude of aloofness from Russia in the Turkish war of 1877-78. He then turned his attentions to France and worked for a Franco-Russian *rapprochement*. He resigned his portfolio as foreign minister in 1882, and died at Baden-Baden on March 11, 1883. See Berlin, Congress of.

Gortchakov, MIKHAIL DMITRIVITCH (1795-1861). A Russian soldier. Of noble family, he became a soldier and saw service against the French in 1812-14. He fought against the Turks in 1828-29, against the Poles in 1831, and against the Hungarians in 1849. In 1846

he was made governor of Warsaw, and when the Crimean War began his reputation was sufficiently high for him to hold an independent command. His first operations were against the Turks in Moldavia and Wallachia, and an unsuccessful attack on the fortress of Silistria, but later he was entrusted with the command in the Crimea. There he won fame by his defence of Sevastopol. In 1856

he was made governor-general of Poland, and died at Warsaw, May 30, 1861.

Gorton. District of Manchester. It is an industrial area on the E. side of the city. It is served by the G.C. Rly. and by tramways, and includes four eccles. districts. The chief industries are chemical works, engineering works, ironworks, and cotton mills. See Manchester.

Gortonites. Religious sect founded in the U.S.A. about 1650 by Samuel Gorton (c. 1610-77). A native of Gorton, Lancashire, he fled to America on account of his religious opinions. At Warwick, Rhode Island, he made a settlement, mainly of those who shared his religious opinions. Named after him, the Gortonites, who disliked all forms and ceremonies, existed until about 1800.

Gortyna or **GORTYN**. Ancient city of Crete, situated on the S. side of the island about 10 m. inland. It was second only to Knossos (q.v.) in importance, and the two cities from an early period were constantly at variance. In Roman times it became the capital of the island. Near Gortyna was discovered in 1884 the well-known inscription containing a code of laws dated about 400 B.C.

Görz. German name for Gorizia (q.v.). It was the capital of the old Austrian crownland of Görz and Gradisca.

Gosau Beds. Series of limestones, marls, and sandstones in the north-eastern Alps of Austria. A local development of the Upper Cretaceous system, they contain massive fossil shells and banks of corals.

Goschen, GEORGE JOACHIM GOSCHEN, 1ST VISCOUNT (1831-1907). British statesman. Born

August 10, 1831, he was of German descent, his grandfather being a publisher of Leipzig. His own birth and education, however, were English, and after a fine career at Rugby and Oriel College, Oxford, he became a partner in the London firm of Fröhling and Goschen. In 1863 he entered Parliament as Liberal member for the City of London, and in 1865 joined the ministry, entering Russell's cabinet the next year. From 1868-71 he was president of the poor law board, and from 1871-74 first lord of the admiralty under Glad-

stone. Declining to take office in 1880, he was sent as special ambassador to Turkey.

As a Liberal Unionist after 1884 Goschen was in more congenial company. He denounced Home Rule with great spirit, and alone of his party took office under Salisbury in 1886. This was the occasion on which Lord Randolph Churchill, confident that his resignation would seriously embarrass the premier, "forgot Goschen," who remained chancellor of the exchequer until 1892. From 1895 to 1900 he was again first lord of the admiralty. He was M.P. for St. George's, Hanover Square, where he had found a seat when Liverpool rejected him in 1887. Previously he had represented Edinburgh, and earlier still Ripon. In 1900 he retired and was made a viscount. He was, however, active in his hostility to tariff reform, and spoke occasionally in the Lords until his death, Feb. 7, 1907.

Goschen was a many-sided man and sturdily independent. As chancellor he was responsible for reducing the interest on Consols from 3 to 2½ p.c., a change of doubtful benefit to the country. He wrote a standard book on the Foreign Exchanges, and in later life edited the *Life and Times* of his grandfather. Short sight prevented him from being chosen Speaker, 1884. From 1903 to 1907 he was chancellor of Oxford University. (See *Life*, Hon. A. Elliot, 1911.)

His son, George Joachim, 2nd viscount (b. 1866), was member for East Grinstead 1895-1906 and was appointed joint parliamentary secretary to the board of agriculture, March, 1918. He became governor of Madras, 1924.

Goschen, SIR WILLIAM EDWARD (1847-1924). British diplomatist. A son of W. H. Goschen, a London banker, and a younger brother of the 1st Viscount Goschen, he was born July 18, 1847. Educated at Rugby and Oxford, he entered the diplomatic service, and after passing some time as attaché at Madrid, Buenos Aires, and Paris, became second secretary at Rio de Janeiro. From there he went to Constantinople, after which he gained experience as principal secretary at Peking, Copenhagen, Lisbon, Washington, and St. Petersburg. In 1898 he was sent as British minister to Belgrade.



Gortchakov



M. D. Gortchakov, Russian soldier



Goschen
Nisbett & Fry



Sir William Goschen, British diplomatist
Russell

From 1900 to 1905 he was minister at Copenhagen, and from 1905 to 1908 was ambassador at Vienna. In 1908 Goschen was transferred to Berlin, and it was his lot to conduct the negotiations immediately preceding the outbreak of the Great War and to leave the German capital on its declaration. In 1901 he was knighted, in 1905 was made a privy councillor, and in 1916 a baronet. He died May 20, 1924.

Gosford, EARL OF. Irish title borne since 1806 by the family of Acheson. It descends from Sir Archibald Acheson (d. 1634), a Scottish lawyer, who was made a baronet, and became a lord of session and a secretary of state. His baronetcy was inherited by his descendants, some of whom settled in Ireland. One of them, Sir Archibald, a county gentleman of Armagh and a member of the Irish parliament, was made Baron Gosford in 1776 and a viscount in 1785. Arthur, the second viscount, was made an earl in 1806. Archibald, the second earl (d. 1849), was governor of Canada, and in 1835 was made a British peer as Baron Worthingham. The present holder is his descendant. The earl's eldest son is known as Viscount Acheson, and his chief residence is Gosford Castle, Armagh.

Gosforth. Urban district of Northumberland. It is 2 m. N. of Newcastle-on-Tyne, having a station on the N.E. Rly. Here is Gosforth Park, where race meetings are held, and around are collieries. Pop. 15,500. Another Gosforth is a village in Cumberland, on the edge of the Lake district, 12 m. S.E. of Whitehaven. It is noted for its ancient viking cross, a structure in the churchyard, 14½ ft. high.

Goshawk (*Astur palumbarius*). Bird of prey, resembling a large sparrow hawk. It is found in many parts of Europe and Asia, but is now very rare in Great Britain. The species was formerly fairly common and was used in the sport of hawking. The plumage is bluish grey on the back, and white barred with brown beneath.

Goshen. Land or district of ancient Egypt. It was given by Pharaoh to Joseph and his kinsmen as a dwelling place. It probably lay between the delta of the Nile and the isthmus of Suez. Its capital was the place now known as Faku.

Goshen. Former Boer republic. It was founded in Bechuanaland, beyond the borders of the Transvaal, in 1881. Its capital was at Rooi Grond. Goshen and the neighbouring republic of Stellaland came to an end when Bechuanaland was proclaimed a British Protectorate in 1885.

Goslar. Town of Germany, in Prussia. It stands on the N. side of the Harz, 27 m. S.E. of Hildesheim. Founded in the 10th century, it quickly gained importance from the silver, copper, and other mines of the Rammelsberg (2,080 ft.), which rises 1½ m. to the S. of the town. It is a picturesque place, with portions of the ramparts still standing, and fine old houses. Goslar suffered for its loyalty to the Hohenstaufen, being destroyed in 1250 by Otho IV. It joined the Hanseatic League, and was very flourishing about 1500.

In 1802 the town was annexed by Prussia, to which it has belonged ever since, except for 50 years after 1816, when it was included in the kingdom of Hanover. The principal places of interest are the Market, with its church; the Kaiserhaus; the Domeapelle, the sole remains of a cathedral founded, like the Kaiserhaus, by Henry III about the middle of the 11th century; and the Kaiserworth (1494), with statues of eight German emperors, several of whom chose



Goslar, Germany. Market place with the fountain dating from about the 12th century

is now used in various senses. It is the name of the biographies of Christ in the N.T.; signifies the message of redemption contained in those books; and is further used as a term for the entire Christian system of religion. Thus in the N.T., "to believe the Gospel" means not merely to accept the record of Christ as true, but to accept all that that record implies. See Bible; New Testament.

Gospellers. Name formerly applied to the followers of Wycliffe and other pioneers of the Reformation in England, who laid stress on preaching the Gospel to the people. It was also given to a party of Antinomians who caused trouble during the Reformation period, and at a later date to the Puritans. In Church ritual, the Gospeller is the deacon who reads the Gospel in the Mass.

Gospel Oak. Name of a short thoroughfare, or Grove, connecting Rochford Street and Havestock Road, London, N.W. It is also the name of a station, 6½ m. from Broad Street on the N.L.R., between Kentish Town and Hampstead Heath. From an old oak tree at the boundary of Hampstead and St. Pancras parishes, at which a portion of the Gospel was read at the beating of the bounds, an inn was named; and the name was later given to the surrounding fields, now built over, to a small village, to a chapel, and to the railway station.

Under one of the trees in Gospel Oak Fields, Whitefield is said to have preached; and here, down to 1857, was held a fair known as Gospel Oak Fair. Herrick, in his *Hesperides* (55, To Anthea), calls the oak the Gospel tree. The custom of Gospel reading at the beating of the bounds appears to have been common in many parts of England.

Gospels, THE FOUR. Name given to the first four books in the N.T., which are ascribed to Matthew, Mark, Luke, and John. The three first stand together and form a striking contrast to the



Goshawk, a large bird of prey, formerly used for hawking

Goslar as a place of residence. The town's industries, besides those connected with the mines, include beer, and cigar manufacture, and chemical works. Pop. 18,900.

Gospel. Anglo-Saxon compound word, god-spel, meaning good news, used as an equivalent of the Greek *euangelion*. The word

fourth. They are called "the Synoptics," because they follow the same lines and deal with the narrative from a similar point of view. Mark is the earliest of the three and gives the story of the life of Jesus in its simplest form. Matthew adapts his narrative for Jewish readers, and his apologetic aim is manifest in his constant use of the argument from prophecy. Luke, on the other hand, being a Greek, strives to make his portrait of Jesus appeal to the Greek-speaking world.

The fourth Gospel was written thirty years later than the others, and is obviously an interpretation of Christ rather than a record of events. Its purpose is definitely stated in the words, "These (signs) are written that ye may believe that Jesus is the Christ, and that believing ye may have life in His name" (xx, 31).

The Synoptic Gospels

The problem of the inter-relation of the Synoptic Gospels has been much discussed recently. It is no longer possible to regard them as independent writings. The immense amount of common material, the similar arrangement of events, the many verbal similarities put such a theory out of court.

It is inconceivable, for instance, that three independent writers in the narrative of the healing of the palsied man at Capernaum could have introduced at the same point in the story exactly the same parenthesis ("he saith to the sick of the palsy"). The hypothesis that the three evangelists embodied and reproduced the oral tradition of the Church is now regarded as inadequate because it does not explain all the facts. The most generally accepted theory is that the similarities in the three narratives can only be accounted for by assuming that the evangelists derived their materials from common sources. One of these sources is generally identified with the Gospel of Mark, perhaps not in its present form.

The justification for this assumption is ample. Practically the whole of our Mark is embodied in Matthew and Luke, and even the order of Mark's narrative is followed by one or other of the later evangelists. It is only very rarely that Matthew and Luke agree in differing from the statements or arrangement, or phraseology of Mark. In addition to Mark we know that the other two evangelists used another document, because their Gospels contain much common material which is not derived from that source. This material is chiefly connected with the teaching of Jesus. It is, there-

fore, highly probable that the second documentary source employed by Matthew and Luke, was a collection of the Logia or Sayings of Jesus; and attempts have been made, notably by Harnack, to reconstruct it. Such a reconstruction, however, is bound to be hypothetical, because when Matthew and Luke diverge, there is no infallible criterion for deciding which of them represents the original.

Comparing the version of the teaching of Jesus in Matthew's Sermon on the Mount with the version in Luke, we find that about a third of the Sermon on the Mount appears in Luke's Sermon on the Plain; another third is found interspersed at many different parts in Luke's, while the remaining third is absent altogether. Again if comparing the versions of the Lord's Prayer or the Beatitudes of the two Gospels, the most striking differences manifest themselves. It is almost impossible in these and many other cases to say whether Matthew or Luke is more likely to be a faithful representation of the original, and hence the character of the second source must always remain problematical as regards its details.

From the statement of Papias (c. 130), bishop of Hierapolis in Phrygia, "Matthew then composed the Logia in the Hebrew tongue and each one interpreted them as he was able," it has been argued that what Matthew wrote was not our present Gospel but the Logia source which was afterwards embodied in it.

Three Strata of Evidence

It follows that our Gospels represent three different strata of historical evidence. The first and most valuable is to be found in the sources of the synoptics—Mark and the Logia. It is from these that our earliest and best material for constructing the life of Jesus is to be obtained. Unfortunately the date at which these documents were written cannot be fixed with any thing like certainty, but they cannot be much later than the decade 50-60. They must certainly have been composed at a time when their statements might have been checked and challenged by the recollection of living witnesses.

The secondary stratum is to be found in Matthew and Luke which

probably belong to the period 60-80, though it is impossible to date them with anything like precision.

The tertiary stratum is the Gospel of S. John which cannot have come into existence much before 100. From an historical point of view its evidence is of much less value. The personal equation of the writer makes its presence felt especially in his version of the teaching of Jesus. There is much to be said for the position of Renan that "if Jesus spoke as Matthew makes him speak, he cannot have spoken as John makes him speak," not that this implies that the Johannine speeches are entirely fictitious, for as Matthew Arnold puts it, "these speeches cannot in the main be the writer's, because in the main they are clearly beyond his reach." See Bible; Criticism; Jesus Christ; New Testament.

H. T. Andrews

Bibliography. The Gospels as Historical Documents, V. H. Stanton, 1903, etc.; The Gospel History and its Transmission, F. C. Burkitt, 1906; Sources of our Knowledge of the life of Jesus, P. Wernle, Eng. trans. E. Lummis, 1907; Gospel Origins, W. W. Holdsworth, 1909.

Gosport. Urban district, seaport and market town of Hampshire, the full name of the urban district being Gosport and Alverstoke, originally two separate villages. Standing on the W. side of Portsmouth Harbour, it is 86 m. from London with a station on the L. & S.W. Rly. A ferry and a floating bridge connect it with Portsmouth, of which it is virtually a suburb. It has various naval establishments, the most notable being the immense Royal Clarence Victualling Yard, and Haslar Hospital, while there are also barracks, a powder magazine, etc. The chief church is Holy Trinity. Pop. 33,300.



Gosport arms



Gosport, Hampshire. The Hard or landing place on Portsmouth harbour

Goss. Porcelain invented by William Henry Goss (1833-1906). It is remarkable for the delicate ivory of its body and the brilliance of the enamels employed in the heraldic decoration which was its earliest distinguishing feature. The ware is made at the Falcon potteries, Stoke-on-Trent. *See* Pottery.

Goss, Sir JOHN (1800-80). British organist and composer. Born at Fareham, Hampshire, Dec. 27, 1800, he became a chorister at the Chapel Royal in London. In 1838 he succeeded his master, Thomas Attwood, as organist of St. Paul's Cathedral, and he held that post until 1872, being knighted on his retirement. He composed many anthems, edited the Church Psalter and Hymnbook, and wrote *The Organist's Companion*. Goss died May 10, 1880.

Gossamer. Fine filaments of cobweb, which may be seen in autumn floating in the air or entangled in the bushes. They are spun by the young of certain spiders, which are thus carried on the wind for considerable distances. The word is applied to a gauzy textile fabric.

Gosse, Sir EDMUND WILLIAM (b. 1849). English man of letters. He was born in London, Sept. 21, 1849,



Edmund Gosse

Russell

his father being Philip H. Gosse, the naturalist, and his mother a Hebrew and Greek scholar. He was educated at private schools in Devonshire. By the influence of Charles Kingsley, he became assistant librarian at the British Museum, 1867-75, and translator to the Board of Trade, 1875-1904. He was librarian to the House of Lords, 1904-14.

Distinguished as poet, critic, translator, and biographer, as a poet his work has much in common with the French *ballade*. In collaboration with J. A. Blaikie, he wrote *Madrigals, Songs, and Sonnets*, 1870, then came *On Viol and Flute*, 1873, which led to his friendship with Lawrence Alma-Tadema, and his marriage, in 1875, with that artist's sister-in-law. His collected poems were issued in 1911.

In 1871-72 he travelled in Scandinavia, and afterwards did much to introduce the work of Ibsen and Björnson to English readers. His *Gossip in a Library*, 1891; *Questions at Issue*, 1893; *Critical Kit-Kats*, 1896; *French Profiles*, 1905; *Portraits and Studies*, 1912, are notable

volumes. So, also, is his *Father and Son*, 1907, a book crowned by the French Academy in 1913. His *Collected Essays* appeared in 5 vols. in 1913; his *Diversions of a Man of Letters* in 1919.

He is the author of biographical studies of Gray, 1882; Congreve, 1888; P. H. Gosse, 1890; Donne, 2 vols., 1899; Jeremy Taylor, 1904; Patmore, 1905; Ibsen, 1908; and A. C. Swinburne, 1917. In 1876 he



published a drama, *King Erik*; in 1892, a romance of 16th century life, *The Secret of Narcisse*; in 1901, an ironic fantasy, *Hypolympia*, or the Gods in the Island. He is the author of several literary histories. He was knighted in 1925.

Gosse, PHILIP HENRY (1810-88). British naturalist. Born at Worcester, April 6, 1810, he spent his early years as a farmer in Canada and a schoolmaster in the U.S.A. Returning to England in 1839, he was sent to Jamaica to collect birds and insects for the British Museum. He then devoted his attention to marine zoology, and published and illustrated several books on the subject. He died at Torquay, Aug. 23, 1888.

Göta. River of S.W. Sweden. Issuing from Lake Wener, at its S. extremity, it flows S.S.E. to the Kattegat through two arms, the southern one passing Gothenburg. About 65 m. long, it is navigable throughout its course. The cataract at Trollhättén is surmounted by locks constructed 1793-1800.

Göta Canal. Waterway of S. Sweden, connecting the Kattegat with the Baltic. Starting from Gothenburg, and utilising the Göta river and Lake Wener, the canal leads to Lake Wetter and then continues E. through small lakes to

the Baltic at Mem, below Söderköping. Its total length is 240 m., the canalised portion being 55 m. It considerably reduces the sea journey between Gothenburg and Stockholm. The canal has 58 locks, a maximum alt. of 300 ft., and is 10 ft. deep. The work was begun in 1716, continued in 1753, and completed 1810-32. *See* Canal.

Göteborg. Swedish name for the town at the mouth of the Göta river. *See* Gothenburg.

Göteborg and Bohus. Län or government of Sweden. It is bounded on the W. by the Skagerrak and the Kattegat, area 1,948 sq. m. Its coast-line is broken by



Gotha, Germany. The castle square viewed from the arcades of the Hall of Commerce. Top, left, the ducal castle

numerous inlets, while many islands fringe the mainland. Pop. 416,508. The capital is Gothenburg (*q.v.*) or Göteborg.

Gotha. Town of Thuringia, Germany. It stands on the slope of a hill 15 m. W.S.W. of Erfurt. The Friedenstein Palace, built about 1645, contains, in addition to a theatre and throne-room, a fine library, and a rich museum in which is included a picture gallery. There is a well-timbered park S. of the palace. The old Rathaus (1574), in the Haupt-Markt, has an elaborate façade.

Gotha has an observatory, many schools, and several banks; while the famous map-making firm of Justus Perthes (founded 1785) employs many skilled hands. The principal manufactures include porcelain, pianos, woollen goods, and machinery, etc. Pop. 39,553.



Gotha arms

Gotha. German aeroplane. It was the type of heavier-than-air craft mostly used in raiding London, Paris, and other large centres during the Great War, and was capable of a speed of about 70 m. to 80 m. an hour. It was a biplane fitted with twin engines, with pusher or tractor air-screws. See Aeroplane.

Gotham. Village of Nottinghamshire, England. It is associated with the phrases "wise men of Gotham" and "mad men of Gotham," once used as synonyms for rustic simpletons, much as Abderites was used in ancient Greece

coast, 5 m. from the mouth of the river Göta, 285 m. by rly. S.W. of Stockholm. The old ramparts are replaced by boulevards adjoining the moat. The city is traversed by numerous canals, has electric tramways, and is served by six railways. It has fine new quarters, hand-some quays, and many parks, besides a cathedral, German and English churches, town hall, exchange, museum with pictures and statuary, and a university and library.

Its spacious harbour is generally ice free. Exports include timber, wood pulp, joinery, paper, cardboard, iron, glass, calcium carbide, matches, butter, fish, and hides. There are shipbuilding yards, saw and flour mills, tanneries, sugar refineries, breweries, tobacco and margarine factories, and textile and other industries.

Founded by Gustavus Adolphus in 1619, it was at first settled by foreigners, chiefly Dutch, Scots, and English. During the Continental blockade of 1806 it was the chief British base in N. Europe. In 1802 the city suffered from a disastrous conflagration, and in Nov., 1920, the fishing harbour was seriously damaged by fire. Pop. 197,421.

Gothenburg System. Plan for dealing with the liquor traffic introduced at Gothenburg, Sweden, about 1871. Adopted in Stockholm in 1877, it has spread to Norway and other countries, and has been adapted in the United Kingdom by the Public House Trust (*q.v.*). Under the Gothenburg system a company may buy up existing licences and open in place of the old licensed houses a limited number of establishments for the sale of pure liquor, the salaried managers of which have no pecuniary interest in the sale of the liquor. Each company is under municipal control, and all profit beyond the realization of 5 p.c. on the capital expenditure is handed over to the civic authorities, with the two-fold result of lowering the rates and checking the cost of maintaining those impoverished by intemperance. See Liquor Traffic; Temperance.

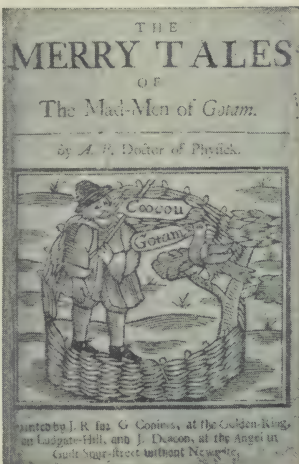


Gothenburg, Sweden. North Hamngatan, one of the quays on the Storshamn canal, which traverses the city

Gothic (late Lat. *Gothicus*). Term meaning connected with the Goths. Originally it was applied to certain distinguishing features of the Middle Ages as contrasted with those of classical times, and connoted rudeness or want of polish. The term is also applied to a certain phase of art and architecture; to type used for printing German, black-faced and pointed letters formerly called black letter; and to the Mozarabic liturgy spoken by the Christians of Toledo, which was supposed to have been introduced into Spain by the Visigoths or Western Goths.

The Gothic language is now generally assigned to the E. Germanic branch of the Teutonic group. Originally spoken by the Visigoths, who in the 4th century occupied Dacia and Moesia, it survived until the 16th century in the Crimea. The alphabet, the invention of which is attributed to Ulfphilas (*q.v.*), consisted of 24 letters, based upon the Greek, but also contained some Latin characters and runic symbols (see Rune). Some idea of this Gothic, or, rather, Moeso-Gothic language, is furnished by the fragmentary remains of the translation of the Bible by Ulfphilas, discovered in Germany and now in the library of the university of Upsala, and of one or two other documents, together with a portion of a calendar, found in Italy. See Goths; Typography.

Gothic Architecture. Manner of building practised in Western Europe, especially in France, from about 1150-1550. Before the earlier date a traditional use of Roman forms had lingered on in some degree and in rude ways. The styles of art then practised are, therefore, now usually called Romanesque. The word Gothic at first was applied to Romanesque art as well and was used in the sense of barbaric. In reality, however, Gothic architecture is one of the most remarkable and refined types of building art ever practised. Gothic art is also frequently



Gotham. Facsimile of the title page of an early edition of the old jest book

for the men of Abdera (*q.v.*). The men of Gotham figure in the jest books and plays of the 15th-16th centuries, notably in the Townley Mysteries and in the black letter collection entitled Merry Tales of the Mad Men of Gotham.

The 20 tales or anecdotes in the collection referred to include the familiar jest of the men who hedged in a cuckoo to compel it to sing all the year, and the story of the man who riding to market, with two bushels of wheat, carried them on his own neck so that his horse should not bear too heavy a burden.

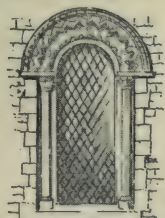
Dekker, in *The Gull's Hornbook*, 1609, alludes to "the wise men of Gotham," as does the old rhyme:

Three wise men of Gotham
Went to sea in a bowl;
And if the bowl had been stronger
My song would have been longer.

Washington Irving, in *Salmagundi*, 1807, called New York Gotham. See Shakespeare Jest Books, ed. W. C. Hazlitt, 1864.

Gothenburg OR GÖTTENBURG (Swed. *Göteborg*). Second largest city and chief exporting seaport of Sweden. It stands on the S.W.

ANGLO-NORMAN



Window, S. John's, Devizes: 1160

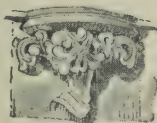


S. John's Chapel, Tower of London: 1078



West Front, Iffley Church, Oxford: c.1170

EARLY ENGLISH



Early English foliage bracket, S. Albans Cathedral



Doorway, Aylesbury Church, c.1250



Window, Church at Stone, Kent: c.1240

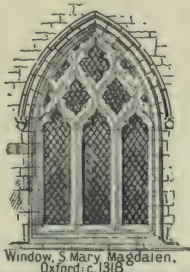


Vaulted roof, Westminster Abbey: c.1260

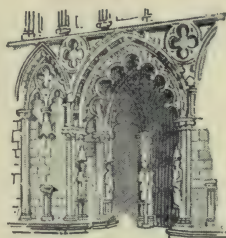
DECORATED



Font, Offley Church, Hertfordshire: c.1350



Window, S. Mary, Magdalen, Oxford: c.1318



Doorway, Lichfield Cathedral: c.1330



Foliated capital, Chapter House, Southwell Cathedral: 1300

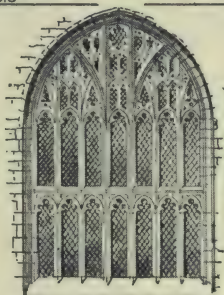
PERPENDICULAR



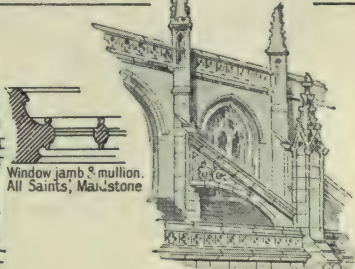
Capital, All Hallows' Church, Wellingborough: c.1450



Finial & Crocket, Magdalen College, Oxford: c.1456



Window, S. Mary's, Oxford: c.1475



Window jamb & mullion, All Saints, Macclesfield

Flying buttress, Sherborne: c.1470

TUDOR



Flower ornament, Henry VII's Chapel, Westminster: c.1510



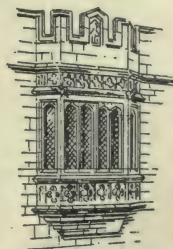
Tudor Rose



Ornamented moulding, Whitchurch, Somerset



Sutton Place, Guildford: 1523



Oriel window, Montacute, Somerset: c.1580



Section of same

GOthic ARCHITECTURE: ITS DEVELOPMENT IN ENGLAND FROM ANGLO-NORMAN TO TUDOR

Specialty drawn for Harmsworth's Universal Encyclopedia by Harold Oakley

called medieval, but this also applies only to western Europe; medieval art in Persia or India, for instance, is not Gothic.

About the middle of the 12th century, especially in Paris and its neighbourhood, all the inherited forms of building were gradually changed under the influence of great dominating principles. The leading ideas were freedom, energy, and delight. There was a great outburst of building fervour especially in churches, and under this impulse the building art became entirely experimental and organic. The modern development of iron structures like great bridges is in some degree a parallel phenomenon; these, too, are experimental and organic, but only in regard to aims limited to commercial profit and political power.

Constructive Balance

The chief problem the medieval builders set themselves to solve was the erection of vast cathedral buildings having high stone vaults. Now, arches and vaults are active things always tending to push outwards and fall; thus these buildings came to be conceived as problems in equilibrium. The higher central vaults of the nave were usually sustained on either side by lower vaults over the aisles, and arched stone props, called flying buttresses, were built from the outer walls of these aisles to the upper part of the main building or clerestory. These arched props were placed only at intervals between the windows; at the outer ends they rose from strong buttress masses built out from the aisle walls. In some of the greater French cathedrals there are two aisles on each side of the central span, the outer ones being the lowest. At the middle point of all, over the intersection of the nave and transepts, a tall lantern tower was frequently built; the whole plan and design turned on this question of constructive balance.

In all the minor parts and details, a similar general idea of functional service was developed, pillars became very tall, and large windows spread over the walls between the supporting points. Still further beyond the actual needs of structure, the expression of tense and active service was increased by breaking up the edges of arches and pillars into many deeply cut mouldings, but these and the many delightful forms of tracery and sculpture were means to what was thought to be proper finish, and do not belong to the structural system proper. It was these details, however, that caught the eyes of the

older students of Gothic architecture, which came to be thought of as a picturesque grouping of towers and traceried windows and pinnacles and parapets.

The great spring-time of Gothic art was the hundred years from 1150-1250; then came a century or so of strong maturity, and then a gradual decline. In England, Canterbury Cathedral was built by a French master-mason from about 1175, but a clear expression of the Gothic spirit hardly became general before 1200. At the middle of the 13th century, Westminster Abbey and Salisbury Cathedral were being built, and great works were in progress at most of the other cathedrals, and at scores of abbeys.

The development of Gothic architecture from first to last was so regular that examples can be dated with fair accuracy at sight. In England the style of work which is most characteristic of the 13th century has been called Early English, the typical work of the 14th century is Decorated, and that of the 15th century is Perpendicular. Although the perfecting of the stone-vaulted cathedral was the great task of Gothic architecture, yet all other building problems, as the castle, bridge, town hall, and house, were dealt with in the same spirit. Gothic and the other style-names here mentioned are all modern; to those who executed it their work was merely good building. *See Architecture; Cathedral; Cologne.*

W. R. Lethaby

Bibliography. Principles of Gothic Architecture, M. H. Bloxam, 11th. ed. 1882; Development and Character of Gothic Architecture, C. H. Moore, 1899; A History of Gothic Art in England, E. S. Prior, 1900; Gothic Architecture in England, F. Bond, 1905; Medieval Architecture, A. C. Porter, 1909; Architecture for General Readers, H. H. Statham, 1909; Gothic Architecture in France, England, and Italy, 2 vols., 1915.

Gothland (Swed. *Gottland*).

Largest island in the Baltic Sea, belonging to Sweden. It lies about 58 m. off the S.E. coast of the Scandinavian peninsula, and is 76 m. long and 30 m. broad, with an area of 1220 sq. m. A level limestone plateau, with an alt. of from 80 ft. to 100 ft., encircled by cliffs and broken by bays, its soil is fairly fertile and the climate comparatively mild. It is well wooded and the marshes have been drained. Cattle, ponies, and sheep are reared, and cereals, sugar beet, fish, lime, stone, and timber are produced. There are some 80 m. of rly. and several small towns.

In the Middle Ages Gothland was a member of the Hanseatic

League, and since then it has had various owners, finally becoming Swedish in 1645. From its form and situation it has been called the Eye of the Baltic. The capital is Visby. Pop. 56,028.

Gothland, GÖTALAND OR GÖTARIKE. Most southerly of the three old provs. of Sweden. It is subdivided into 12 läns or departments. Mountainous and forested in the N., and including lakes Wener and Wetter, it also contains some of the most productive soil in the country. Gothenburg (*q.v.*) is the largest town.

Gothlandian. System of stratified rocks, developed in Shropshire, Wales, the Lake District, southern Scotland, and north-eastern and central Ireland. They are named after the island of Gothland, where they are typically developed. They consist of two main types of rocks; a great thickness of limestones, sandstones, and shales, containing fossil remains of brachiopods, corals, molluscs, and trilobites; and beds of fine-grained deposits—dark shales and mudstones—containing graptolites.

Three modern divisions are the Valentian (at base), Salopian, and Downtonian. Formerly they were divided into Llandovery, Wenlock, and Ludlow series, but correlation in different areas was difficult owing to variation in facies. At the top of Ludlow the Ledbury shales (Downtonian) form passage beds into the overlying Old Red Sandstone of the Devonian system. Rocks of Gothlandian age are well developed in Scandinavia, Bohemia, Normandy, Brittany, and the Baltic provinces.

Goths. Teutonic people of the Scandinavian branch. In the 1st century A.D. they appear to have been dwelling in the neighbourhood of the Baltic and the river Vistula. In the 3rd century they had migrated southwards and were spreading along the N. of the Black Sea and the Lower Danube. In the second half of that century they annihilated the army of the emperor Decius, were heavily defeated later by Claudius, and were finally allowed by Aurelian to settle in Dacia. There they were known as the Visigoths or Western Goths, while the tribes which remained in the E. were called Ostrogoths.

They dwelt on friendly terms with the Roman Empire for the next hundred years, but towards the close of the 4th century the pressure of the Huns (*q.v.*), who subjugated the Ostrogoths, forced the Visigoths to push over the Danube, and the emperor Theo-

dosius compromised with them by allowing their settlement in Thrace. They had already adopted the Arian form of Christianity, taught by the missionary Ulphilas (*q.v.*).

Invasion of Italy

After the division of the empire between the two young sons of Theodosius, a new migratory movement began among the Goths. Gothic cohorts had been embodied in the Roman army; an injudicious reduction in their pay stirred the Visigoths to revolt under the leadership of Alaric the Amaling. Alaric was pacified by being made governor of Illyricum, but, in 400, he led his Visigoths to invade the Western Empire, by way of N. Italy. He was held back for a time by Stilicho, but in 408, when Stilicho was dead, Alaric renewed his invasion, swept through northern Italy, and in 410 captured and sacked the city of Rome for the first time since its capture by the Gauls 800 years before. Though the Goths wrought much devastation they were distinguished as being by far the least cruel of barbarian conquerors; and the impressive majesty which still attached to the name Rome is emphasised by the strange fact that Alaric chose not to set himself on the imperial throne, but to act as lieutenant of the emperor.

Although the Goths might have taken possession of Italy, Ataulf,

who succeeded Alaric, in 411 withdrew his Visigoths into southern Gaul. There the Gothic kingdom of Toulouse was set up, in nominal subordination to the Roman empire. In 451 its king, Theodoric, joined with the Roman general Aëtius in inflicting a decisive defeat upon Attila (*q.v.*) and the Huns, when Theodoric himself was killed.

The kingdom of Toulouse embraced Spain as well as southern Gaul. The Goths, in fact, were granted the sovereignty of this territory as an official recognition of their services to the Roman empire in Spain, which had been conquered by Ataulf's successor Wallia. The peninsula had just before been overrun by a kindred but infinitely more cruel race, the Vandals (*q.v.*). Wallia's conquest, nominally the recovery of Spain from the Vandals, drove that people into the southern portion of it, which still bears the name of Andalusia; later they migrated to Africa. At the beginning of the 6th century the kingdom of Toulouse was overthrown by the Franks (*q.v.*) under Clovis, whose career was checked by the Ostrogoth Theodoric (to be distinguished from Theodoric the Visigoth).

In Spain the Gothic dominion continued. By the middle of the century it had reverted to the form of an elective monarchy which had prevailed among the Goths under

the old tribal system. In one of the revolutions which are the normal accompaniment of elective monarchies, a prince named Ermengild, who had relinquished Arianism for orthodox Christianity, earned the martyr's crown by refusing to revert to Arianism, but in the reign of his brother Reccared, the Gothic people conformed to the prevailing creed of Western Europe and adopted orthodox Christianity.

The Saracens in Spain

The Church, hitherto hostile, now became friendly, but its friendship became more dangerous than its enmity, since the rulers fell under the domination of Churchmen, who in their own interests hindered, instead of helping, all efforts to centralize the government. The Saracens invaded Spain, and the last Gothic king, Roderic, was overthrown in the great seven days' battle of the Guadalete in 711. The Moors overran the peninsula, and the surviving Goths were driven into the remote fastnesses.

The Ostrogoths had fallen under subjection to the Huns, but when the Hun empire broke up on the death of Attila they reappeared on the middle Danube. Thence about 470 they descended into the Balkan peninsula. Their young king Theodoric emulated the career of Alaric. Acting as lieutenant of the eastern emperor Zeno, he carried



Goths. The Goths in Italy, from the painting by P. F. Poole, R.A., depicting one of the drunken orgies to which the barbarians of the north abandoned themselves when they encountered the luxuries of Italy

his Ostrogoths into Italy, overthrew Odoacer, the Teutonic chief who had deposed the last of the Roman emperors, and established himself as the viceregent of Zeno. He proved a soldier and legislator of exceptional ability, but died in 526.

The emperor Justinian resolved to make his dominion in Italy a reality; his general Belisarius (*q.v.*) temporarily wrested the supremacy from the Goths; after his departure they recovered their ascendancy under Totila, a worthy successor of Theodoric. Belisarius failed to overthrow him, but the task was finally accomplished by Narses. The Ostrogoths, their power completely shattered, retreated to the N., dispersed, and were never heard of more.

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Goto or Gotto. Group of islands off the S.W. extremity of Japan. They lie W. of Kiushiu and 60 m. W. of the port of Nagasaki. Known also as the Five Islands, the largest are Fukai, Hisaka, and Nakadori. Fukai is 25 m. in length.

Götterdämmerung. German name for the Norse Ragnarök, or the Twilight of the Gods; the break-up of the power of the gods of Teutonic mythology which would result in a new cosmogony. Wagner (*q.v.*) made it the theme of one of his operas.

Gottesberg. Town of Silesia, Germany. Lying at an alt. of 1,900 ft., 46 m. S.W. of Breslau, its industries include coal-mining, and linen and hosiery manufactures. Pop. 10,644.

Gottfried von Strassburg (fl. 1210). German poet. His unfinished epic *Tristan*, adapted from the French, is the only work that can with certainty be ascribed to him. In this poem, distinguished by style and beauty of expression, the author exhibits remarkable psychological insight.

Göttingen. Town of Germany. In the Prussian province of Hanover, it stands on the Leine, 67 m. from Hanover. Above the town rises the Hainberg. There is an old town and a new town; the former is still surrounded by its fortifications, which have been turned into promenades. In and around its narrow streets are Göttingen's most interesting buildings; the Rathaus, built in the 14th century and restored in the 18th, and the churches of S. John and S. James. Here, too, are some curious old

houses. In the market-place, in front of the Rathaus, is the goose-girl fountain. The chief industries are the making of chemicals, scientific instruments, and textiles, while it is a publishing centre. A canal, really an arm of the Leine, flows through the town. When Hanover formed a separate kingdom, Göttingen was one of its chief towns, while it was an important place also in the duchy of Brunswick, which preceded Hanover. It



Göttingen. Johanns Strasse, one of the old thoroughfares, showing the tower of St. John's Church

became a corporate town about 1200, joined the Hanseatic League, and in the 18th century was a literary centre. During the Great War there was a prisoner-of-war camp here.

Göttingen is chiefly famous for its university, founded by the English King George II in 1734. It rapidly became noted, owing to the high quality of its teachers. In 1837 seven of its professors, the two Grimms, Ewald, and Dahlmann among them, were expelled for protesting against the act of King Ernest Augustus in taking from the people a constitution granted in 1830. The main building is on the Wilhelmsplatz. The university has also a library, one of the richest in Germany, laboratories and museums, an observatory, botanical garden, and hospitals. Göttingen has also several scientific and other societies. Pop. 37,600.

Gottschall, RUDOLF VON (1823-1909). German author. Born at Breslau, Sept. 30, 1823, after studying at Königsberg, Breslau, and Berlin universities, he applied himself to dramatic literature. An ardent liberal, under the excitement of the revolution of 1848 he produced three tragedies, an epic, and a volume of poems. In 1854 appeared Carlo Zeno, an epic poem, also an historical comedy, Pitt and Fox. Thereafter his output of

plays and miscellaneous work was great, the former being collected in 1884 in 12 vols. His best novel was *Im Banne des Schwarzen Adlers*, 1877. He died Dec. 18, 1909.

Gottsched, JOHANN CHRISTOPH (1700-66). German critic. Born at Judithenkirch, near Königsberg, he began early to lecture at Leipzig, where he became a professor in 1734. He sought to reform the German drama, and establish poetry as a matter of definite rule. For a time his influence was considerable, and he was regarded as a prophet of German literary culture, inspired by French models. He died at Leipzig, Dec. 12, 1766.

Gouda or TER Gouw. Town of the Netherlands, in the prov. of S. Holland. It stands on the Yssel at its junction with the Gouw, 12 m. N.E. of Rotterdam, and is intersected in all directions by a system of canals. Notable buildings are the Groote Kerk, founded in 1485 and rebuilt in 1552, and the Stadhuis, built 1449-59.

The principal industries are the manufacture of candles, cigars, twine, pottery, pipes, and the famous cheese. A trade in cattle and cereals is carried on. Gouda canal connects Amsterdam with the Lek oil refineries. Pop. 29,704.



Gouda. The Gothic Stadhuis, built in 1449-59, with the Renaissance staircase, 1603

Gough, HUGH GOUGH, 1st Viscount (1779-1869). British soldier. Born at Woodstown, co. Limerick,



1st Viscount Gough,
British soldier

After J. Jackson, R.A.

Nov. 3, 1779, he belonged to a family that had long lived in Ireland. In 1794 he entered the army, and took part in various expeditions against France and her allies. In 1809 he went to Spain, and in the Peninsular War made a reputation by his gallantry and also as a regimental leader. After 1819 he served in Ireland.

In 1837 he commanded a division in India, whence he went to China as commander-in-chief during the war of 1840-41. In 1845 he was made commander-in-chief in India, and as such he took the field against the Mahrattas in 1843, and against the Sikhs in 1845. He crushed the Sikhs, his culminating victory being at Sobraon, but in 1848 they rose again in arms. Gough met them at Chillianwalla, and, although that combat was not decisive, a victory at Gujarat put an end to their resistance before the order for his recall reached him. In 1846, being already a baronet, he was made a baron, and in 1849 a viscount. A field-marshal, he died March 2, 1869.

Gough was succeeded by his son George, and then by his grandson Hugh (1849-1919), who became the 3rd viscount in 1895.

Gough, SIR HUBERT DE LA POER (b. 1870). British soldier. Born Aug. 12, 1870, of a famous



Sir Hubert Gough,
British soldier

Irish family of soldiers, he was educated at Eton and Sandhurst, and in 1889 joined the 16th Lancers. He served in the Tirah expedition, 1897-98, and afterwards went through the S. African War. In 1907 he took over the command of the 16th Lancers. Then serving in Ireland, Gough resigned his commission rather than proceed against Ulster, but, this difficulty adjusted, he took the 3rd cavalry brigade to France in Aug., 1914, and was later given the command of a division, and in July, 1915, of the 1st corps.

In July, 1916, he was placed at the head of the 5th army, which he had led during the battle of the Somme. In 1917 his tactics at the

third battle of Ypres were criticised as unduly costly, but he was still with his army when the Germans broke through the British line in March, 1918. He did everything possible to stay the rush, but was held responsible for the disaster and recalled. In 1919 he was appointed head of a military mission to coordinate allied effort in the Baltic States. Gough was knighted in 1916, and made a lieutenant-general in 1917. See The Fifth Army in March, 1918, by W. S. Sparrow, with a foreword by Gen. Sir H. Gough, 1921.

Gough, JOHN BARTHOLOMEW (1817-86). American temperance lecturer. Born at Sandgate, Kent,

England, Aug. 22, 1817, he went to America, and in 1831 became a book-binder in New York. Drunkenness and a dissolute life, which hastened the death



John B. Gough

of his wife and child, brought him to destitution. Befriended by a Quaker, he took the pledge in 1842, and soon became a powerful and convincing lecturer on temperance, himself furnishing a useful illustration of his text. In 1853 he lectured in London. He died Feb. 18, 1886.

Gough, JOHN EDMOND (1871-1915). British soldier. Born Oct. 25, 1871, he was the son of Sir Charles Gough, V.C., and nephew



John Edmond Gough,
British soldier
Swaïne

of Sir Hugh Gough, V.C. He entered the army in 1892, joining the Rifle Brigade, and served in British Central Africa, 1896-97, the Nile Campaign, 1898, and the S. African War, 1899-1902. He took part in the Somaliland operations, 1902-3, and commanded the force in action at Daratoleh, 1903, where he gained the V.C. He was at the head of the Somaliland force, 1908-9, and later inspector-general, of the King's African Rifles. He took part in the Great War, 1914-15, and his death on Feb. 22, 1915, was the result of a stray German bullet.

Gough-Calthorpe, SIR SOMERSET ARTHUR (b. 1864). British sailor. A son of Lord Calthorpe, he was born Dec. 23, 1864, and entered the navy in 1878. He served in the naval brigade in the

Nigerian Expedition of 1895, was naval attaché at St. Petersburg during the Russo-Japanese War,



Sir S. A. Gough-Calthorpe,
British sailor
La Fayette

1904-5, and in the Great War commanded the 2nd cruiser squadron, 1914-16. In 1916 he was appointed second Sea Lord, and in 1917 was placed in command of the coastguard and reserves. Next year he was appointed commander-in-chief in the Mediterranean, and in Nov., 1918, high commissioner at Constantinople. From 1920 to 1923 he was commander-in-chief in Portsmouth. Knighted in 1916, he was promoted admiral in 1919.

Gouin, SIR LOMER (b. 1861). Canadian politician. Born at

Grondeins, Quebec, March 19, 1861, the son of a lawyer, he was educated at Levis and at Laval University, Montreal. In 1884 he became a barrister, and in 1897 was returned to the provincial legislature by a division of Montreal. In 1900 he took office as minister for public works in Quebec, and in 1905, having just resigned, he was recognized as the man to form a strong government, acceptable to the French Canadians and Roman Catholics. He held office until July, 1920. In 1921-3 he was minister of justice for Canada.



Sir Lomer Gouin,
Canadian politician

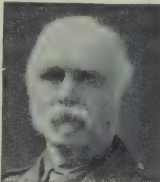
Goujon, JEAN (c. 1515-67). French sculptor. A native of Normandy, probably born in Rouen, in 1541-42 he executed various sculptures for the cathedral and the church of S. Maclou in that city. Shortly afterwards he removed to Paris, where his connexion with the Louvre established and preserved his reputation. He took a prominent part in the decoration of the building—his four Caryatides being famous—and some of the finest examples of his genius have found a home there.

Goulard's Extract. Strong solution of lead subacetate. It is prepared by boiling lead oxide and lead acetate with water. It was discovered by Thomas Goulard (1720-90) of Montpellier, and in a diluted form is known as Goulard's lotion or water. It is used as an application for wounds.

Goulburn. River of Victoria, Australia. It is 345 m. long, a tributary of the Murray, which it joins 9 m. E. of Echuca. It flows in a N.W. direction through good agricultural and gold-bearing country, and is stocked with trout. It is navigable in its lower reaches.

Goulburn. Town of New South Wales. A rly. junction 134 m. S.W. of Sydney on the main line to Melbourne, it stands on the Wollondilly river, in an agricultural, dairying district. It possesses two cathedrals, Anglican and Roman Catholic, fine public buildings, and tanneries, boot factories, breweries, and flour mills. Pop. 10,023.

Gould, Sir Alfred Pearce (1852-1922). British surgeon. Son of George Gould, a Baptist minister, he was educated at Amersham Hall School, Reading, and University College, London, where he graduated in medicine. In 1877 he joined the staff of the Westminster Hospital, and in 1882 that of the Middlesex Hospital, where he became lecturer and consulting surgeon. As a surgeon, he soon had a large practice, and his reputation won for him the position of president of the Medical Society of London and other honours. He was also vice-chancellor of London University and president of the Röntgen Society. During the Great War he was surgeon in charge at one of the great London hospitals. Knighted in 1911, Sir Alfred wrote several works on surgery, a notable one being *The Elements of Surgical Diagnosis*, 5th ed. 1919. He died April 19, 1922.



Sir A. Pearce Gould,
British surgeon

Russell

Gould, Sir Francis Carruthers (1844-1925). British caricaturist. Born at Barnstable, Dec. 2, 1844, for many years he was a member of the London Stock Exchange, where his talent for producing clever sketches of a humorous and satirical order became well known. Having illustrated the Christmas numbers of *Truth* with remarkable acceptance, he formally embarked upon the profession of caricaturist, working for *The Pall Mall Gazette*.



Francis Carruthers Gould

E. H. Mills

He was also vice-chancellor of London University and president of the Röntgen Society. During the Great War he was surgeon in charge at one of the great London hospitals. Knighted in 1911, Sir Alfred wrote several works on surgery, a notable one being *The Elements of Surgical Diagnosis*, 5th ed. 1919. He died April 19, 1922.

Later he transferred his services to *The Westminster Gazette*, of which his cartoons soon became an outstanding feature. Many of his political pictures have appeared in volume form, and his other publications include *Froissart's Modern Chronicles*. He was knighted 1906; died Jan. 1, 1925.

Gould, George Jay (b. 1864). American capitalist. Eldest son of Jay Gould, he was born Feb. 6, 1864, and in 1885 became a member of the New York Stock Exchange. A partner in the banking firm of W. E. Connor & Co., he turned his attention to rlys. about 1888, and at different times was president of over fourteen rlys. and manager of many other concerns, including the Western Union Telegraph System.

Gould, Jay (1836-92). American capitalist. Born at Roxbury, New York, May 27, 1836, he left



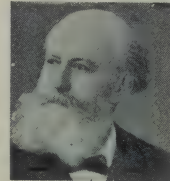
Jay Gould,
American capitalist

his father's farm at the age of 16 and entered an ironmongery store. Here he remained until 1856, spending his spare time in the study of surveying. After a venture in the lumber trade, he took advantage of the rly. panic of 1857 to buy a controlling interest in the Rutland (N.Y.) Washington Rly. Two years later he opened a broker's business in New York.

In 1856 he became president of the Erie railroad, of which he had obtained the controlling interest, and manipulated rly. stock to enormous profit. The Union Pacific, Missouri Pacific, Wabash, Texas Pacific, St. Louis and Northern, and

St. Louis and San Francisco Rlys. were all controlled by him, whilst in 1881 he formed the Western Union Telegraph System. He died on Dec. 2, 1892.

Gounod, François Charles (1818-93). French composer. He was born, the son of a painter, at



Ch. Gounod

Paris on June 17, 1818, and entered the conservatoire of Paris in 1836. After studying there under Fromental Halévy, he went to Italy as winner of the Prix de Rome. On his return to

Paris he became organist at the chapel of the Missions Étrangères. His name was brought into public notice by the production of his first opera, *Sappho*, in 1851, and his next operatic success was in 1858 with a clever setting of *Le Médecin malgré Lui*. Gounod's version of Goethe's *Faust*, which set him in the forefront of operatic composers, was brought out in Paris in 1859. Its first performance in London was in 1863.

Henceforth his work secured a ready hearing, and there came *Philémon et Baucis*, 1860, and *La Reine de Saba*, 1862, which has always met with more success abroad than in France. *Mireille*, on a libretto of the Provençal poet Mistral, appeared in 1864, and his fine rendering of the story of *Romeo and Juliet* in 1867. Meanwhile he had also been writing much other music, sacred and secular, notably the *Mass of St. Cecilia*, 1855. Among his other



F. C. Gould. Example of his political caricature. "A meeting of the Tariff Committee of the Birmingham Liberal Unionist Association. All its members are said to have been present." July 21, 1903

By permission of *The Westminster Gazette*

sacred music should be remembered two other Masses, 1876 and 1887, and the two oratorios *The Redemption* and *Mors et Vita*, produced at the Birmingham Festivals in 1882 and 1885 respectively. Gounod, who came to England during the Franco-Prussian War, died at St. Cloud, Oct. 18, 1893.

Despite much severe criticism of his sometimes over-florid and over-sweet style, Gounod's work at its best has a permanent interest. His operas are untiringly welcomed in all countries, his Masses are frequently sung, some of his songs, e.g. the *Ave Maria*, a melody boldly superimposed on the first prelude of Bach, are universally familiar. He exercised a great influence on the following generation of French composers. Gounod was personally a man of wide culture and deep religious feeling, both reflected in his work, and a volume of his autobiographical notes and reprinted articles was published in 1896.

Goupil Gallery. Art gallery at No. 5, Regent Street, London, S.W. It was established as a centre for the exhibition and sale of modern pictures in 1901 by William Stephen Marchant, who left the Paris house of Goupil & Co. in 1898 to manage their London establishment. In 1902 he introduced the pictures of Henri le Sidaner to London, and exhibitions have been held also of the works of W. Nicholson, W. Orpen, W. Rothenstein, Augustus John, J. M. Whistler, and other artists, among them representatives of the modern French and Dutch Romantic school.

Gouraud, HENRI JOSEPH EUGÈNE (b. 1867). French soldier. Born at Paris, Nov. 17, 1867, he



Henri J. Gouraud,
French soldier

joined the French army as a lieutenant of *chasseurs à pied* in 1890. He saw active service in the Sudan in 1898; in the Congo, Senegal, and Morocco, being promoted brigadier-general, June 4, 1912. He was at the head of the 1st Colonial Army Corps in Feb., 1915.

In July, 1915, he was severely wounded while in command of the French forces in Gallipoli. Returning to France, in Dec. he was given command of the Fourth Army. In 1916 he was appointed resident commissary general in Morocco, but in June, 1917, was again in command of the Fourth Army. In July, 1918, he repulsed the Germans from Reims and in the Argonne. In 1919 he became high commis-

sioner of France in Syria and Cilicia, and commander-in-chief of her army of the Levant. See *Marne*, *Battles of the*.

Gourd (Lat. *cucurbita*). Half-hardy annual trailing plant of the natural order Cucurbitaceae, mostly native of India. Some, such as pumpkins and marrows, bear edible fruits, while others are grown merely for decorative purposes, and trained to climb over arches and upon poles and other garden



Gourd. Examples of some ordinary forms. The species shown include: 1. Vegetable Marrow; 2. Water Melon; 3. Winter Melon; 4. Great Yellow Gourd

structures. Ornamental gourds are raised from seeds planted in rich soil at the end of May, or the beginning of June, and watered freely in dry weather, liquid manure being substituted when the fruits have formed. Gourds require no pruning or cutting back.

The story of Jonah and the gourd (Jonah, 4) is well known. The kind of several varieties of gourd, including the bottle-gourd (*q.v.*), is used by natives to form flasks or bottles for carrying liquids.

Gourgand, GASPARD, BARON (1783-1852). French soldier. He rose to the rank of general in the Napoleonic campaigns, and after the final overthrow of Napoleon accompanied his master to St. Helena, where he assisted him in the preparation of his Memoirs. He published an account of the campaign of 1815, and a vehement refutation of Scott's *Life of Napoleon*, but his most important book is his *Journal inédit de Ste. Hélène*, first published in 1899. He died in Paris, July 25, 1852.

Gourko, BASIL JOSEFOVITCH ROMEIKO (b. 1867). Russian soldier. Born May 8, 1867, he entered the army in 1883. He took part in the Russo-Japanese War, 1904-5. At the outbreak of the Great War he was in command of a cavalry division of the army which invaded E. Prussia in Aug., 1914.

In 1916 he commanded one of the Russian S.W. armies in Volhynia, and in 1916-17 was for some time commander-in-chief of the Russo-Rumanian army in

Moldavia. In 1917, after the revolution, he was put in command of the Russian Central Army, but resigned as a protest against the disorganization of the army by the Soviets. Later he came to London, where in 1918 he published his *Memoirs and Impressions of War and Revolution in Russia, 1914-17*.

Gourko OR **GURKO, JOSEPH** VASILIVITCH (1828-1901). Russian soldier. Of a noble Lithuanian

family, he was born Nov. 15, 1828, and became an officer of the imperial guard. He rose rapidly in rank, and served in the Crimean War, but his military reputation rests entirely upon his achievements against the Turks in 1877-78. He led a Russian detachment across the Danube and seized Tirnova; he then drove the Turks from the Shipka Pass, and pressed further into their empire.

Falling back, he defended the Shipka against Turkish efforts at recapture, and had a large share in the operations that led to the fall of Plevna. One operation was an advance on Sofia, which he occupied, having previously driven the Turks from Orhanie. Near Philippopolis he gained one of the few real victories of the war, and he had won other successes when the struggle ended. Gourko was afterwards governor of St. Petersburg and of Odessa, while from 1883-94 he was governor-general of Poland. He died Jan. 29, 1901.

Gourmont, RÉMY DE (1858-1915). French literary critic and scholar. Born at Bazoches, Orne dept., France, he came under the influence of Huysmans, Gérard de Nerval, and Mallarmé, and is remembered as a champion of the symbolist movement in modern French poetry, a scholar, and a writer who to a distinguished literary style added philosophic insight. From 1883-91 he held an appointment at the Bibliothèque Nationale, Paris. Afterwards he became editor of *Le Mercure de France*. He wrote *Les Français au Canada*, 1888; *Proses Moroses*, 1896; *Le Pèlerin du Silence*, 1896; *Le Livre des Masques*, 1896-98; *Esthétique de la Langue Française*, 1899; *Promenades Littéraires*, 1904-6; *Une Nuit au Luxembourg*, 1906; *Promenades Philosophiques*, 1906-8; a volume of verse, *Divertissements*, 1912. Two of his works, *Lettres à l'Amazone* and *Pendant la Guerre*, were



Joseph Gourko,
Russian soldier

published posthumously, 1916. He died Sept. 27, 1915. See Portraits and Speculations, A. Ransome, 1913.

Gourock. Burgh and watering-place of Renfrewshire. It stands on the S. side of the Firth of Clyde 3 m. from Greenock, with which it is connected by electric trams, as it is with Port Glasgow. It is a station on the C. Rly. The town, which is divided into two parts,



Gourock arms

Kempoch and Ashton, has a number of industries, mainly connected with shipping, while its sheltered bay is much frequented by yachts. The chief public building is the Gamble Institute, and there are golf links here. Legendary and historical associations cling to a stone called Granny Kempoch. Gourock became a burgh in 1694. Pop. (1921) 10,128.

Gout (Lat. *gutta*, drop, humour). Constitutional disorder characterised by excess of uric acid in the blood, and deposit of urate of sodium in the joints and their vicinity. The precise changes in metabolism which occur during the condition are not fully understood. Hereditary influences are an important predisposing cause; alcoholism and over-eating without sufficient exercise are frequent antecedents. Workers in lead are particularly liable to the disease. Males are more frequently affected than females, and the disease is exceptional under the age of thirty-five.

Three forms are generally recognized: acute, chronic, and irregular gout. In the acute attack there may be premonitory symptoms, such as twinges of pain in the small joints of the hands and feet, and indigestion. The attack most often begins in the early hours of the morning, with violent pain in the joints of the big toe, which rapidly become hot and swollen. Sometimes the knee or finger joints are first affected, and several joints may be involved simultaneously, or in rapid succession. The temperature rises to 102° or 103°. The pain lessens in a few hours, but recurs towards evening for the next two or three days, the severity of the symptoms gradually abating.

After the first attack, the joint affected appears to return to the normal condition, but repeated attacks result in more or less stiffness and swelling of the articulations. Ultimately the condition passes into the chronic form, the



Gourock, Scotland. The town and bay on the south side of the Firth of Clyde

joints being permanently enlarged, deformed and irregular. So-called "chalk stones" are formed about the knuckles and elsewhere, and the skin over them is stretched and sometimes ulcerated. Deposits of sodium urate in the cartilages of the ear are common. Besides local signs the patient usually suffers from dyspepsia and more or less continuous ill-health. Irregular gout is a condition seen in persons who, while not suffering from definite attacks of gout, have a tendency to the disease often due to hereditary influences. The tendency may manifest itself in a liability to eczema, biliousness, thickening of the arteries, headache, neuralgia, diabetes, etc.

With proper care, gouty persons may live for many years, but long-continued attacks are very likely to bring about Bright's disease, uraemia (*q.v.*), changes in the arteries, and affections of the heart. In an attack of acute gout, the affected limb should be raised, and the pain may be relieved by warm fomentations. Colchicum is a valuable remedy, and the administration of citrate of potash or lithium is often useful. Chronic gout must be kept under control chiefly by carefully regulated living.

Meat should be taken sparingly, and rich substances, such as sweetbreads, liver, and kidney, as well as most soups and meat extracts, should be avoided. Fresh fish, eggs, milk, butter, and fresh vegetables are useful. Alcohol is better avoided completely, but a small amount of whisky may be allowed. Regular sufficient daily exercise and attention to the bowels are important. Overwork and business worry should be avoided.

Gouzeaucourt. Village of France, in the dept. of Nord. It lies 9 m. S.S.W. of Cambrai. It was prominent in the first battle of Cambrai, being captured by the Germans in their counter-offensive, Nov. 30,

1917, and after being held by them for three hours was retaken by the Guards division. Captured by the Germans in the spring of 1918, it was recaptured by the British 5th and 42nd divisions on Sept. 28 of the same year. Several British war cemeteries are in the vicinity. See Cambrai, Battles of.

Govan. Suburb of Glasgow, until 1912 a separate municipality. It lies on the S. side of the Clyde opposite Glasgow proper, although part of the parish of Govan is N. of the river. It is served by the Glasgow & S.W. Rly., and is also connected with Glasgow by electric tramways and a district rly. that goes under the Clyde. The chief industry is shipbuilding, there being immense yards here. There are also docks, while steamers call at the pier. Engineering works and foundries are among the other industries.

The principal public buildings are the parish church, with some early Christian monuments in its churchyard, S. Mary's U.F. church, and the large Merryflats poorhouse. Here is Elder Park. The growth of shipbuilding in the 19th century turned Govan from a village into a populous town, and when it was united with Glasgow in 1912 it had a pop. of about 90,000. See Glasgow.

Governess-cart. Low-hung, small, two-wheeled, one-horse carriage, holding four persons. It has



Governess-cart. Low, two-wheeled vehicle used on country roads

two seats, facing inwards, and a small door at rear. Usually drawn by a pony or quiet cob, it is uncomfortable, but safe, and is named from its use as a children's conveyance.

GOVERNMENT: ITS MAIN FUNCTIONS

Prof. W. S. McKechnie, Author of *The State and the Individual*

The method of government in each country of the world is described under that heading, e.g. Canada; England; France; Germany. See also articles on the various instruments of government, e.g. Cabinet; King; Parliament. See also Democracy; Sovereignty; State

The term government (Lat. *gubernare*, to steer, direct) describes the work of those who guide the ship of state, determining its course and controlling its rate of progress. The numerous services performed on behalf of the complex modern state are usually classified as legislative, or the making of laws; executive, or the enforcing of laws; and judicial, or the interpretation of laws.

The facts are hardly so simple as this classification seems to suggest. The legislature, indeed, is the supreme authority in enacting and repealing statutes. The judiciary, i.e. the judges taken collectively, it is equally true, confines itself to expounding the law and applying it to particular cases. But the executive government by no means restricts its activities to executing or enforcing statutes and judicial decisions; it is the agent or man of business of the community as a whole, conducting the domestic, colonial, and foreign policy of the state, accepting responsibility for army, navy, and the numerous civil services and departments of government, and managing the whole national property.

The word "administrative" would less inadequately indicate the extent and nature of these functions. Long-established usage, however, points to "executive" as the natural antithesis to legislative, and no confusion need arise if the words are recognized as interchangeable.

Powers of the Legislature

If the usual three functions of government, however, are still to be accepted as covering all the activities of a modern state, the word legislature must be so interpreted as to include not merely law-making proper, but also the right to impose taxes involving complete control over the financial and material resources of the nation. Parliament passes money bills as well as ordinary bills, and this power, now freed from all restrictions, forms a weapon of almost incalculable possibilities.

The form of government of a state is known as its constitution, which may thus be defined as the sum of the principles, usages, and laws that determine who is to exercise in any given state the supreme legislative, executive, and judicial authorities respectively, together with the relations of these

authorities to each other, and to individual citizens. To define the relations between the supreme legislature and the supreme executive is the first problem under every form of constitution; and in Great Britain the solution has been found in cabinet government.

The British Cabinet

The cabinet is, indeed, the characteristic and central feature of the modern British system of government, and illustrates the subtle manner in which ancient theories and institutions have been made compatible with modern requirements and realities. In theory the British Constitution is the embodiment, in the clearest and the most typical manner, of Montesquieu's doctrine of the separation of powers; in practice, by an application of the principle of unity in difference, it has resulted in the almost complete monopolisation of all authority both legislative and executive by one small group of political leaders, ministers of the crown, who, possessing the confidence of the House of Commons, acting in the king's name, and sharing among them the control of all the great departments of government, together form the cabinet for the time being. In this cabinet or inner circle of the ministry all the powers of government have come to be concentrated.

In theory the making of laws rests with king, lords, and commons. Statutes are granted by the king in his own name, while the lords spiritual and temporal, and the commons are merely consenters to the grant. In theory the king's free acquiescence is the chief essential. In practice he could not withhold his approval except in circumstances that are almost impossible to occur, and then only on the advice and at the request of responsible ministers. The theoretical right of the lords, again, freely to reject or amend had been much curtailed even before 1911, while the Parliament Act has almost extinguished it.

Finally, the consent of the all-powerful House of Commons is practically assured to cabinet measures beforehand from the fact that the majority in the lower chamber, organized in normal times upon party lines, vote as they are directed by the party leaders, with whom their own political interests and hopes of office are

closely bound up. In this busy age, only ministerial measures have a fair chance of becoming statutes. Thus, by a slow and bloodless revolution, the cabinet has usurped the legislative rights of king, lords, and commons.

It has equally usurped the monarch's administrative authority. While in theory the supreme executive power is to-day, in the strict letter of constitutional law, vested solely in his majesty King George V as an individual as fully as it was in Henry VIII or Edward I, in practice every official act of the crown is in reality the act of the cabinet. Thus functions which in theory are carefully separated and vested in different organs are in reality collected together again and placed under exclusive control of the cabinet, on the sole condition that that cabinet retains the confidence of its faithful henchmen, the majority in the people's chamber.

The system of polity now supreme in the British Empire is thus one of extreme simplicity; all real power is concentrated in one central authority, the cabinet in alliance with the Commons' House.

This system is known from one point of view as parliamentary government, because the predominant House of Commons by its support keeps the cabinet in power; and, from another point of view, as cabinet government because the cabinet owes responsibility to parliament.

Party or Coalition

It is one of the merits of the constitutional system that in times of emergency it can rapidly adapt itself to new needs by the formation of a coalition ministry which is no longer dependent on the support of one of the two great parties. That party system, which is reckoned, in normal times, to be required for smooth working of cabinet government, would seem not to be essential to its existence. It is one thing, however, to do without party government for a brief period of abnormal stress and quite another thing to attempt to discard it altogether.

The great rival of cabinet government, as a system of popular control, is presidential government as exemplified in the U.S.A., where the president, appointed by an elaborate method of what is nominally double election, is not, like the British Cabinet, responsible to Congress. In Switzerland, again, a democratic form of polity has been established on a federal basis that seems to be entirely independent of the party system, and includes as its main feature the possibility of

frequent appeals from the decisions of its houses of legislature to the enfranchised people by the expedients known as the referendum and the initiative. These devices, so far as they extend, are a method of summoning "the people" of Switzerland to a direct share in the legislative function of government.

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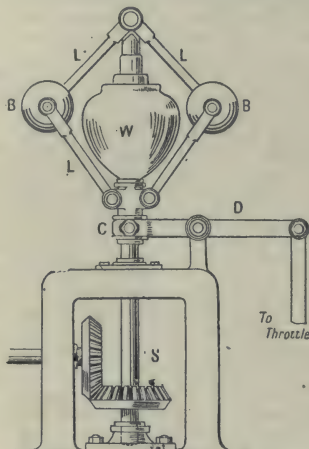
Governor. In mechanics, an apparatus for regulating the working speed of an engine under varying conditions of load. Most governors for steam and internal combustion engines follow the original ball governor of James Watt, and a diagram of a modern example is given above. S is a vertical shaft, rotated by the engine through a bevel gear. Four links, L L L L, connect two metal balls, B, B, with the top of S and with a weight, W, grooved near the bottom at C. The weight is able to move freely up and down S.

When the speed of the engine exceeds a certain limit, B B move outwards and raise W, which brings with it the forked end of lever D. The supply of steam is decreased by the movement of D and the speed falls. B B now move inwards; the motion of D is slightly reversed, and the supply of steam is increased. In some governors W is replaced by an adjustable spring under compression; such governors can be run with the shaft horizontal.

Governor (Lat. *gubernare*, to steer). Representative in a province or colony of the supreme authority of a state. Under the Roman Empire civil officials with proconsular power and rank governed the senatorial provinces, i.e. those in which legions were not

maintained; the imperial provinces, requiring military forces for their security, were governed by *legati Augusti*, with full military power and wide jurisdiction.

Under the British system of colonial administration governors are classified as governors-general, governors, and lieutenant-governors. Governors-general are appointed by the Crown to represent its authority in India, where the governor-general is also styled viceroy; the Dominion of Canada; the Commonwealth of Australia; the Dominion of New Zealand;



Governor for regulating the speed of an engine. See text

the Union of S. Africa; and the Anglo-Egyptian Sudan. Governors appointed by the Crown administer three of the fifteen administrations into which India is divided, viz. Madras, Bombay, and Bengal; the six original states of the Commonwealth of Australia; the Colony and Protectorate of Nigeria, the Crown Colonies, and most of the Colonies. Lieutenant-governors are appointed by the king for the Northern and the Southern Provinces of Nigeria; and by the governor-general of India for the Punjab, the United Provinces of Agra and Oudh, Burma, and Bihar and Orissa.

In the U.S.A. each state elects a governor as the chief official in the legislative and executive management of its own affairs.

Gow, NIEL (1872-1807). Scottish violinist. Born at Inver, near Dunkeld, March 22, 1727, his skill



Niel Gow,
Scottish violinist
After Raeburn

in playing reels made him famous. In London he was in great request at fashionable gatherings, and he also did most useful work in preserving the old Scottish melodies. Gow, who died March 1, 1807, had four sons all musicians, and his and their compositions are found in The Gow Collection of old Scottish songs.

Gowanlea. British drifter. She was one of the craft forming the drifter line across the Straits of Otranto, May 15, 1917, when this line was attacked by Austrian light cruisers from Cattaro. Skipper Watt of the Gowanlea was awarded the V.C. for his gallantry. See Adriatic Sea, Operations in the.

Gowbarrow Park. Estate in the Lake District of England, now public property. It is on the N. side of Ullswater, on the slopes of Gowbarrow Fell. The original park was about 2,000 acres in extent, but additions have been made to it. It contains a shooting lodge called Lylph's Tower, and the beautiful waterfall of Aira Force. Gowbarrow was bought by the National Trust and opened in 1906.

Gower. Peninsula of Glamorganshire. It lies between the rivers Tawe and Loughor, being about 27 m. long and 7 m. across. It contains Swansea and Oystermouth, is almost surrounded by the waters of the Bristol Channel, and retains certain customs of its own. The Welsh call it Gwyr.

Gower was conquered by the Normans in the 12th century, and therein some of them settled, built castles, and introduced the feudal system. It had its own lord, who had the privileges of a lord of the marches; he held his court at Swansea and had his own sheriff and other officials. The lordship passed from the family of De Braose to John de Mowbray, duke of Norfolk. The earl of Pembroke was a later lord, and from that family it passed by marriage to the Somersets, now represented by the duke of Beaufort. In 1535, however, Gower was included in Glamorganshire (*q.v.*).

Gower, JOHN (c. 1325-1408). English poet, contemporary and friend of Chaucer, who calls him "moral Gower." He lived largely at his country seat in Kent, but details of his life are obscure. He became blind shortly before his death, and was buried in S. Saviour's Church at Southwark.



John Gower,
English poet



1. London, LL.D. 2. London, M.A. 3. Glasgow, LL.D. 4. Glasgow, M.A. 5. Cambridge, LL.D. 6. Cambridge, M.A.
 7. Birmingham, LL.D. 8. Birmingham, M.A. 9. Oxford, Mus. Doc.; Oxford D.C.L. is similar in shape, but the robe
 is scarlet cloth with crimson silk facings. 10. Oxford, M.A. 11. Edinburgh, LL.D. 12. Edinburgh, M.A.

GOWNS AND HOODS WORN BY LL.D.'s AND M.A.'s OF THE PRINCIPAL BRITISH UNIVERSITIES

Specially drawn for Harmsworth's Universal Encyclopedia by J. F. Campbell from gowns lent by Ede and Ravenscroft, London



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LL.D. 24. Wales, M.A.

GOWNS AND HOODS WORN BY LL.D.'S AND M.A.'S OF THE PRINCIPAL BRITISH UNIVERSITIES

Specially drawn for Harmsworth's Universal Encyclopedia by J. F. Campbell from gowns lent by Ede and Ravenscroft, London

Gower's chief works are *Speculum Meditantis*, written in French, which was lost for centuries and discovered at Cambridge in 1895; *Vox Clamantis*, in Latin, which deals with the rising of Wat Tyler; and *Confessio Amantis*, in English, a collection of tales after the model of Chaucer's *Canterbury Tales*. Gower is unconsciously prolix and somewhat dull. The *Vox Clamantis*, which runs to 30,000 lines, is redeemed by the author's gift for story-telling and a certain quaintness of fancy. The standard edition of his works is that by G. C. Macaulay, 1899-1902.

Gown. Word meaning an outer garment of loose shape. It is now used in two senses, for the robe worn by graduate and undergraduate members of universities, and of learned societies generally, and as a synonym for the outer garment of a lady. There are also dressing gown, tea gown, etc. *See* Costume; Dressmaking; Hood; also colour plate.

Gowrie, EARL OF. Scottish title borne from 1581 to 1600 by the family of Ruthven. The 1st earl was William Ruthven, 4th Lord Ruthven; he belonged to an old family, and one of his ancestors had been made Lord Ruthven in 1488. Like his father, the 3rd Lord Ruthven, he was active in the troubled times of Queen Mary. He was concerned in the raid of Ruthven, as the seizure of James VI at Ruthven Castle in 1582 was called. The earl was executed for treason in 1584, but the estates were restored to his son William, the 2nd earl, who died in 1588. John Ruthven, who then became the 3rd earl, is chiefly known for his share in the Gowrie conspiracy. During the attempt to seize the king, he was killed, Aug. 5, 1600, and the title became extinct. The estates of the earl were mainly in Perthshire. *See* Ruthven.

Gowrie Conspiracy, THE. Plot against the person of James VI of Scotland, attempted by John, earl of Gowrie, and his brother Alexander, known as the master of Ruthven. On Aug. 5, 1600, the king was mounting his horse at Falkland Palace for a day's buck hunting when Alexander Ruthven approached and told him that a countryman had found near Perth a wide pot all full of coined gold in great pieces, and that the man was detained in Gowrie Castle, where the king was prayed to come and examine him.

About 7 o'clock the king accordingly rode there with a few attendants, Ruthven spurring forward to warn his brother of the king's approach. James's sus-



John Gower. Effigy and tomb of the poet in St. Saviour's Church, Southwark

picious had been aroused by Ruthven's strange manner, and also by Gowrie's appearance with an escort of fourscore armed retainers to meet his royal visitor, and he was further angered by the sorry cheer provided for his refreshment. After dinner Alexander led him to a remote part of the castle, up a winding stair, and through several rooms, the doors of which he locked behind him, into a gallery chamber where a man was waiting with a dagger in his girdle. Seizing this dagger, Ruthven held it to the king's breast, and threatened to stab him if he uttered a sound. James pleaded with him, and by promise of pardon and silence on the subject, prevailed on him not

to strike. Ruthven left the room to consult his brother, leaving the king in the custody of the servant.

Ruthven returning told the king he must die, and a desperate struggle followed, during which James managed to drag Ruthven to a window whence he called for help to his attendants, whom Gowrie had vainly tried to induce to leave, alleging that the king had already departed by another door. Sir John Ramsey was the first to find his way upstairs, and stabbed Ruthven, who was dispatched on the stairs by Sir Thomas Erskine and Sir Hugh Harries also rushing to the rescue. The earl of Gowrie, hurrying in, was stabbed to the heart by Ramsey.

What lay behind the facts remains uncertain. An investigation was held, but even at the time popular feeling ran high against James, whom the people believed to be "a doer and not a sufferer." It was alleged that he desired to extirpate the Ruthven family, who made some pretensions to the throne, and the proved forgery of letters produced by a notary, George Sprot, which purported to have been written by Sir Robert Logan of Restalrig to Gowrie, has strengthened this opinion, further confirmed by the ruthless treatment meted out to the surviving Ruthvens. On the other hand, it has been suggested that the Ruthvens were actuated by desire to avenge their father's execution, and also that the conspiracy originated in the English court with the connivance of Elizabeth. *See* The Tragedy of Gowrie House, L. A. Barbé, 1887; James VI and the Gowrie Mystery, Andrew Lang, 1902.



Gowrie Conspiracy. The death of John and Alexander Gowrie, frustrated in their plot to assassinate James VI of Scotland

From a print in the British Museum

Goyana. Town of Brazil, in the state of Pernambuco. It stands on the river Goyana, 40 m. N.N.W. of Pernambuco. It has a Carmelite monastery, schools, a hospital, law courts, and factories, and trades in cotton, dyewoods, sugar, rum, coffee, tobacco, cattle, and hides. Pop. about 15,000.

Goya y Lucientes, FRANCISCO JOSÉ DE (1746-1828). Spanish painter and etcher. Born of peasant



Francisco Goya y Lucientes,
Spanish painter
Self-portrait

parents at Fuendetodos, in Aragon, he studied art under José Martínez at Saragossa. Having become embroiled with the authorities, he was obliged to flee to Madrid, and a few years later had to seek refuge in Italy. Returning to Madrid in 1775, he married the sister of Bayeu, the court painter, through whose interest he was commissioned to design the famous tapestries now in the Prado. In 1785 he became deputy director of the San Fernando Academy, in 1789 painter of the chamber to Charles IV, and in 1814 court painter to King Ferdinand. He was in Seville, 1817, at Paris, 1824, and at Bordeaux, 1825, where he died April 16, 1828.

A revolutionary in life as well as in art, Goya delighted in offending conventional susceptibilities. His three most famous sets of etchings, *Los Caprichos*, the *Tauromaquia*, and *Los Desastres de la Guerra*—the last inspired by Napoleon's invasion—express his mordantly satirical genius almost better than any of his paintings; but his portraits and subject paintings, with their uncompromising realism, are hardly less characteristic. The best of his work is at Madrid, but there are four examples in the National Gallery, London. See *Carnival*.

Goyaz. Central state of Brazil. It is bounded on the W. by Matto Grosso, and on the E. by Minas Geraes and Bahia. Area, 288,462 sq. m. Several mt. ranges traverse the state, the chief of which are the sierras of the Matto Gordo, the Cordillera Grande, and the Serro do Paraná, mostly running from N. to S. and of no great elevation. The principal rivers are the Tocantins, which rises as the Maranhão in the S. of the state and flows due N. through the centre; the Araguay on the W. boundary; and the Paranaíba. Several other streams are unnavigable because of cataracts and



Goya. His portrait of Doña Isabel Corbo de Porcel, painted in 1806, now in the National Gallery, London

currents. Extensive forests fringe most of the rivers, and a large portion of territory in the northern districts of the state is unexplored.



The S. part of the state contains the principal centres of the civilized population. Formerly gold was extensively worked, but the output has declined considerably. Silver, copper, marble, and iron exist, but are unworked. Diamonds and quartz crystals, called Brazilian pebbles and used in optical work, are found. The chief occupation is stock-raising, but the cultivation of coffee, sugar, to-

bacco, and cacao is carried on. Goyaz is the most backward of the Brazilian states, transport facilities are almost non-existent, and rlys. are only just beginning to be laid down. The site for the Federal capital has been selected from this state, on a plateau between Formosa, Pírinopolis and Santa Lúgia. The climate is agreeable on the whole. Pop. 541,287.

Goyaz, the capital of the state, was formerly known as Villa Boa de Goyaz. It stands on the Vermelho river, on the N. side of the Serra de Santa Rita, at an alt. of nearly 2,000 ft., 650 m. N.W. of Rio de Janeiro. A well-

built town, the chief buildings are a cathedral, governor's palace, schools, churches, and a town hall. Goyaz was founded by Bartholomew Silva towards the end of the 17th century. Pop. 25,000.

Goyen, JAN VAN (1596-1665). Dutch painter. Born at Leiden, Jan. 13, 1596, he worked for a while in France, and on his return to Holland took finishing lessons from Esaias van de Velde. After a short sojourn in Haarlem he resided in his native city for several years, removing in 1631 to The



Gozo, Malta. Wall in the Gran Castello containing Norman archways. Top, left, interior of the cathedral looking eastward

Hague, where he died in April, 1665. He painted the river, canal, and coastal scenery of the Netherlands.

Gozo or **Gozzo**. British island of the Maltese group. It lies 4 m. N.W. of Malta, is 8 m. long and 4 m. broad, and has an area of 26 sq. m. Composed of coralline limestone, the surface is diversified, fertile, and well cultivated, producing fruits and vegetables. Lace is made. There are remains of cyclopean walls, and a tower and Roman monuments. The chief towns are Victoria, formerly Rabato, in the centre of the island, and Fort Chambray on the S.E. coast. Pop. 21,911.

Gozzi, **CARLO**, COUNT (1722-1806). Italian dramatist and memoir writer. He was a native of Venice. His farcical plays and fairy pieces in the Venetian patois enjoyed considerable popularity for their satiric wit. They were written to ridicule his dramatic rivals, Carlo Goldoni and others, and their success contributed to drive Goldoni from Venice. See his *Memoirs*, 1797, Eng. trans. J. A. Symonds, 1890.

Gozzoli, **BENOZZO** (1420-98). Florentine painter, whose real name was Benozzo di Lese. Born in Florence, he studied under Fra Angelico, whose assistant he afterwards became. Gozzoli was an industrious and painstaking fresco painter. Among his famous works are a Virgin and Child and St. Thomas Receiving the Girdle from the Virgin, painted in 1459 for the church of San Fortunato at Montefalco (the latter now in the Lateran Museum, Rome); the decorations for the Riccardi (then the Medici) Palace in Florence, particularly the frescoes of *The Journey of the Three Magi and Angels in Paradise*; and the series of twenty-four frescoes of Biblical themes executed for the Campo Santo, Pisa.

G.P.I. Abbrev. for general paralysis of the insane.

G.P.O. Abbrev. for General Post Office.

G.R. Abbrev. for Georgius Rex (King George).

Graaff, **SIR DAVID PIETER DE VILLIERS** (b. 1859). South African politician. Born March 30, 1859,



Sir David Graaff,
S. African politician.

Russell

he was the son of a Boer at Villiersdorp. He entered business in Cape Town, and in time became head of the firm of Combrinck & Co. In 1891 he was chosen mayor of the city, and in the same year he entered the legislative council of the

Cape of Good Hope, where he remained until 1899. In 1907 he returned to the council, but in 1910 he was elected by Namaqualand to the first parliament of the Union of S. Africa. Botha made him minister of public works, which post he held until 1912, being afterwards minister without portfolio. In 1914 he was for a time high commissioner for S. Africa in London, but in 1915 he returned home to become minister of finance. He resigned office in 1916, although he remained a member of the legislature. In 1911 he was made a baronet.

Graaf Reinnet. Town of Cape Province. It stands on the Sunday river, 185 m. by rly. N. of Port Elizabeth. Founded in 1784, it is situated in a district famous for its angora goats and ostriches. To the N. are the Sneeuwbergen, of which the Compassberg rises to a height of 8,208 ft. above sea level. The town possesses a college for Dutch students, and is noted for its fruit and wine.

Grabbe, **CHRISTIAN DIETRICH** (1801-36). German dramatist. Born at Detmold, Lippe, Dec. 11, 1801, his dissipated habits undermined his talents, and he died of drink in his native town, Sept. 12, 1836. Though much of his work is extravagant in plan, and lurid in presentation, it was marked by real poetic and dramatic genius. His best plays were *Don Juan* and *Faust*, 1829; *Frederick Barbarossa* and *Napoleon*, 1831.

Gracchus. Name of two reformers in ancient Rome. They were the sons of Cornelia (*q.v.*), daughter of Scipio Africanus the Elder, by Tiberius Sempronius Gracchus, governor of hither Spain in 181 B.C., who made the province one of the most peaceable in the Roman dominions.

The elder, Tiberius Sempronius Gracchus (163-133 B.C.), was present at the siege of Carthage and served in Spain, and on his journeys to and from that country the deplorable condition of Italian agriculture first drew his attention. The public land, *i.e.* the conquered territory distributed among Roman citizens, had largely and illegally passed into the hands of a comparatively small number of wealthy people, who cultivated their immense farms chiefly by slaves.

As tribune for the year 133 B.C., he brought forward a measure providing that the public lands should be distributed in small holdings among the poor, and that a certain proportion of free labourers should be employed on all large farms. This measure brought Tiberius into conflict with the senate and with

large numbers of the wealthy classes, and another tribune, Octavius, was suborned to veto the proposed legislation.

Tiberius thereupon got the assembly of the people to deprive Octavius of his office, and the bill was passed. Threatened with impeachment at the end of his term of office for his illegal proceedings, Tiberius set himself to obtain the tribunate for another year. The elections were held, but the senate declared that they were illegal, and in the riots which ensued Tiberius and 300 of his followers were killed. Tiberius was a man of noble character, and his reforms were prompted by a genuine desire to improve the



Gracchus. Cornelia, mother of the Gracchi, with her sons. From a group by P. J. Cavelier, 1814-94

Luxembourg, Paris

condition of his less fortunate fellow citizens. Nor was his work altogether in vain; much land was recovered, and during the next decade the census showed an increase of 70,000 citizens.

Ten years after the death of Tiberius, the agitation was renewed by his brother, Gaius Sempronius Gracchus (153-121 B.C.), who, after service in Spain and as quaestor in Sardinia, was tribune in 123 and 122 B.C. His policy was to put his reforms on a much broader basis than those of his brother, and not to rely on the support of only one class in the community.

In addition to renewing the purely agrarian legislation of Tiberius, his measures included the establishment of colonies for settlement by the poor, extensive army reforms, and a monthly dole of corn to all citizens at less than half the market price, while an endeavour was made to secure the support of the wealthy capitalists of the equestrian order by giving them the privilege of acting as jurymen. These proposals met with

opposition from the senate, which Gracchus sought to counter by reviving the constitutional legislative powers of the assembly of the people which had been usurped by the senate. His policy virtually amounted to a revolution, and the senate, thoroughly alarmed, put forward a tribune, M. Livius Drusus, to outbid Gracchus. An additional proposal of Gracchus to extend the franchise among the Italians alienated many of his purely Roman supporters, and strengthened the hands of the senate. Gracchus was not elected for the tribunate of 121, and steps were taken by the senate to repeal his measures. The result was a riot, in which Gracchus perished, as his brother had done before him. Less disinterested, perhaps, than Tiberius, Gaius was undoubtedly the abler man. The democratic movement which he started was eventually the chief instrument in the overthrow of the senatorial ascendancy.

Grace (Lat. *gratia*). Term used in theology to express the love of God manifesting itself in free and undeserved favour to mankind. This manifestation is threefold and progressive. First, there is the original and eternal love with which God views His creatures; hence He wills that all men shall be saved and sends forth His Son to accomplish that salvation by His death. This is the grace of undeserved favour. Secondly, this fact is brought to the knowledge of man by the preaching of Christ and His Apostles, and by the teaching of the Christian Church. This is the grace of outward instruction. Thirdly, the knowledge of salvation is made effectual in the soul and the life by the supernatural gift of the Holy Spirit, whereby man embraces the salvation freely provided and offered him. This is the grace of inward sanctification. The first is often known as general grace, and the second and third combined as particular grace.

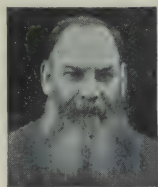
Persons are said to be in a state of grace when they are living in communion with God, are penitent for their sins, and are making use of the means of grace provided by Christ. The sacraments are the special channels of divine grace; but whether their efficacy depends on the faith of the recipient is one of the points of controversy between Catholics and Protestants. In regard to the relationship of the grace of God to the free will of man, S. Augustine and the Calvinists maintained that all good in man is due to the grace of God; while the Pelagians taught that grace merely guided and helped

man's free will. The Church generally takes the view that the grace of God and the free will of man cooperate in all good works; though some hold that every good thing wrought by the will of man is due to the preventient or anticipatory grace of God. See Calvinism; Theology.

Grace (Lat. *gratia*). Word meaning a favour of some kind. It is thus used in law and politics. In England an Act of Grace is one passed at the opening of a new reign, granting a general pardon to certain classes of offenders, usually insolvent debtors. In Scotland the term is applied especially to an Act of 1696, which compelled every creditor, who had caused a debtor to be imprisoned for debt, to be responsible for the debtor's maintenance while in prison. Favours granted by sovereigns were long known as graces, and the term survives at the universities, being used there for certain permissions, e.g. to take a degree. Days of grace are days allowed, beyond the appointed time, in which a bill of exchange must be met. The phrase your grace is used in Britain in addressing archbishops and dukes, the idea behind it being that persons of these high ranks granted favours.

Grace. Form of thanksgiving said or sung before or after meals. Something of the kind was in use among the Greeks and Romans, but the existing graces are of Christian, and mainly monastic, origin. They are said in the halls of public schools and colleges, at Oxford and Cambridge, the Inns of Court, and other learned societies, and frequently at public dinners. Some societies have their own grace, often a long one. A popular form is *Benedictus benedictat* (May the Blessed bless) used before, and *Benedicto benedicatur* (May the blessed be blest) after the meal.

Grace, WILLIAM GILBERT (1848-1915). English cricketer. Born July 18, 1848, at Downend, Gloucestershire, his



W. G. Grace
Russell

and George Frederick—played for Gloucestershire.

Educated for the medical profession, Grace became a doctor,

but cricket was his real career. In 1863 he began to play in first-class matches, and in 1870 became a member of the Gloucestershire county team, which almost at once ranked as a first-class county. This he captained until 1899, and under him it was at one time the champion county. He captained the English team in its test matches against Australia until 1899, and to that country he took teams in 1873-74 and 1891-92; he also visited the United States. In 1899 he severed his connexion with Gloucestershire, and became manager of the new London County club. He died on Oct. 23, 1915.

The champion, as Grace was called, was certainly the greatest cricketer who ever lived. A man of massive frame, over 6 ft. in height, he was also devoted to other sports, being a fine runner, but mainly with the idea of keeping himself fit. As a batsman he was superb, but he was also a notable fieldsman and a skilful bowler. He knew the game from end to end, and part of his success was due to his judgement.

Grace's performances with the bat were marvellous, the more so because they were done on the rougher wickets of the past. Altogether, up to 1900, when his career as a first-class cricketer ended, he scored over 51,000 runs. In 1871 he scored 2,739 runs in the season, an average of 78, including ten innings of over 100 each. His highest score in first-class cricket was 344, while on ten occasions he scored over 200. He played in a long series of Gentlemen v. Players matches from 1865 to 1899; 15 times he scored over 100 in these games. As a bowler he took over 2,800 wickets, while in seven seasons he scored over 1,000 runs and took over 100 wickets. In 1895, when nearing fifty, he scored 2,346 runs, giving him an average of 51. Grace wrote *Cricketing Reminiscences*, 1899.

Gracechurch Street. London thoroughfare connecting Fish Street Hill with Cornhill and Leadenhall Street, E.C. Known in the 13th century as Garscherchesstrate (A.S. *gaers, gers, græs*, a blade of grass, herb, hay), from the grass or herb market held in the yard of S. Benet's Church, its present name dates from 1666. S. Benet's stood on the E. side, at the junction with Fenchurch Street, was burnt in the Great Fire, rebuilt by Wren 1685, and demolished 1867-68, when the street was widened. Tarlton the clown lived here, and at the Cross Keys Inn, No. 15, which existed down to the middle of the 19th century, Banks exhibited his horse

Marocco. At No. 13 William Hone opened The Grasshopper coffee house. Some scenes of Thomas Heywood's comedy, The Wise Women of Hogsdon, are laid in this street.

Grace Notes. In music, a note not essential to the harmony, added to give piquancy to melodies. Such notes are usually written smaller than the ordinary notes. See *Acciacatura*; *Appoggiatura*; *Mordent*; *Shake*; *Trill*; *Turn*.

Graces. In classical mythology, the three deities of grace and beauty, called Charites by the Greeks and Gratiæ by the Romans. See Charites.

Gràcia. North-western suburb of Barcelona, Spain. It has tramway communication with the Plaza de la Paz, near the docks. There are manufactures of linen and cotton. See Barcelona.

Grackle or **GRAKLE** (Lat. *graculus*, jackdaw). Name given to the hill mynah of Malay and India. These birds belong to the starling family, and have glossy black plumage with yellow wattles on the sides of the head. They live entirely on fruit, and are remarkably clever talkers and mimics.

Gradient (Lat. *gradus*, a step). Term usually applied to a road or railway for the degree of ascent or descent. The extent or amount of inclination may be denoted in several ways. Thus a gradient of two degrees 52 minutes is equal to a gradient of 5 p.c., or a gradient of 1 in 20, and is equivalent to a rise or fall of 1 ft. for every 20 ft. of horizontal distance. The gradient of a river or flow of water is known as its fall. The ruling gradient of a road or railway is the steepest gradient generally encountered except where additional assistance for hauling is provided. On roads the ruling gradient is about 1 in 30 except for very short distances. On railways it varies according to the general nature of the country traversed, the class of traffic, and the type of locomotive employed. See *Railways*; *Roads*.

Gradisca. Town and district of Italy, formerly of Austria-Hungary. The town is 6 m. S.W. of Gorizia on the Isonzo river. It has an old castle now used as a prison, and its fortifications have been replaced by fine promenades. Its population of nearly 2,000 are Italians, and during the Great War it became a leading objective of the Italian armies, forming part of "Italia irredenta." Its capture by General Cadorna, June 9, 1915, completed the Italian control of the Lower Isonzo. Recaptured by the Austrians when the Italians retreated to the Piave it fell once more into

Italian hands during the final defeat of the Austrians in 1918. Pop. 34,150. See Isonzo, Battles of the.

Gradishsk. Town of the Ukraine, Russia, in the govt. of Poltava. It stands near the Dnieper, 20 m. N.E. of Kremenchug. At the great fair in May much trade is done in grain, horses, cattle, hemp, tar, flax and butter. There is a large sugar-refinery in the neighbourhood. Pop. 10,000.

Gradual or **GRAYL** (Lat. *gradus*, a step). Ancient liturgical chant or antiphon. Also called the responsory, it is sung at High Mass after the reading of the Epistle. Called the gradual from being formerly sung on the altar steps or while the deacon ascended the steps of the ambo (*q.v.*) or reading desk to sing or read the Gospel, it is called the responsory because it answers the Epistle or because it is sung antiphonally. It is followed by the Hallelujah or, in penitential seasons, by the Tract. The book containing these pieces of music, to which Haydn, Mozart, Cherubini and others contributed, was known as the Gradale or Graduale, a term later extended to include other portions of the service.

Gradual Psalms. Title given to Psalms cxx–cxxxiv. The early Fathers regarded them as marking the steps by which the soul ascends to God. In the Roman Breviary they are divided into three sets of five each. Formerly said before matins every day in Lent, the obligation of reciting them in choir was abolished by Pius X. The term Song of Degrees, applied in the A.V. to a number of these Psalms, is altered in the R.V. to Song of Ascents. Of the many theories of the title the most generally accepted is the explanation that these Psalms were sung during the "goings up" or pilgrimages of the Jews to Jerusalem for the great annual feasts. They are usually attributed to the early part of the post-exilic period.

Gräfenberg. Village of Czechoslovakia, formerly in Austrian Silesia. It stands among the Sudetic Mts., 37 m. N.W. of Troppau. It is chiefly known for its water-cure, the first hydro-pathy having been established here by Priessnitz in 1826. Pop. 1,100.

Graffiti. Italian word meaning ancient scribbling. Written or drawn upon walls, rocks, potsherds and other surfaces, graffiti were scratched with sharp implements, drawn in charcoal or chalks, or painted. Universal in range, from neolithic drawings on cave-walls at Gezer and rocks in the Nile valley, to scratchings by 2nd century Chinese pilgrims on Shantung

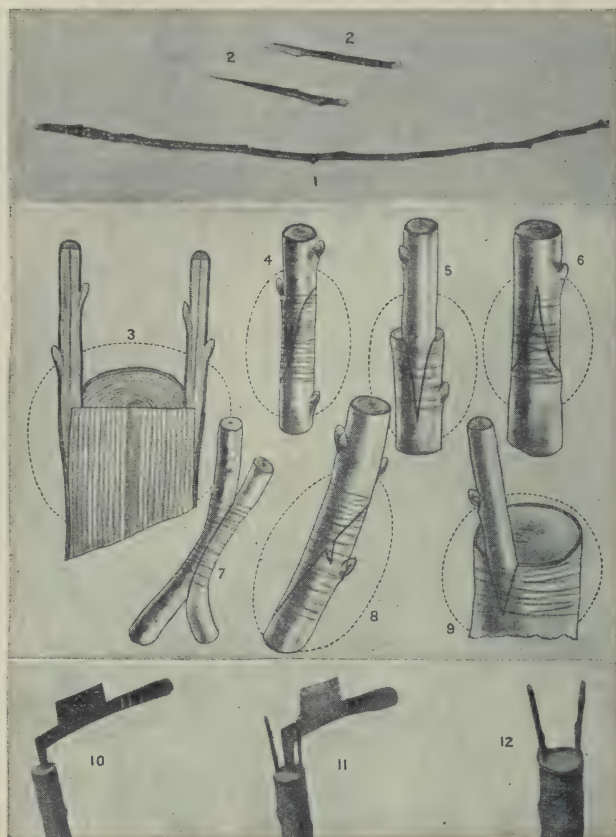
tombs, and viking runes at Maeshowe, they survive in modern school-boy and tourist scrawls. In ancient Egypt they occur on pyramid walls at Medum and on potsherds; many thousands are recorded from Thebes. At Pompeii they included sporting tips, election notices and amatory effusions. On Silchester potsherds they show the Romano-British populace habitually using Latin. Numerous in ancient Rome, a caricature of the Crucifixion was found on the Palatine in Rome in 1857; Marucchi found in the St. Sebastian catacomb, in 1915, 4th century graffiti confirming its traditional association with the remains of SS. Peter and Paul. See Art, Primitive; Inscriptions.

Graft. Term in common use in the U.S.A. and Canada to signify the use of public positions for private gain, such as the gathering in of perquisites, or of illegal commissions, or the official acquisition of knowledge that can be used profitably in private business. Regarded as a part of the "spoils of office," this corruption has been extended by the change of public officials with every change of the party in power.

Grafting. Method of transferring a branch or bud of a choice variety of tree to a vigorous foster-parent, so that the bud or branch may be benefited. This bud is technically known as a "scion," the stem to which it is transferred as the "stock." Many different sorts of plants and trees can be grafted, but the operation is generally confined to roses and fruit trees. The most suitable time for grafting is in the springtime, when the sap is rising in the wood.

The chief object of the operation is to increase the supply of a desirable variety of fruit or flower which cannot easily be multiplied by seed. Various forms of grafting are known as "cleft," "tongue," and "slip," which are really distinctions without much difference, the important thing being to ascertain that the scion, or graft, is firmly embedded upon the stock, and protected from the weather by a covering of clay or wax.

A shoot of the scion should be cut down to a point with a sharp knife, and an aperture of suitable capacity prepared in the stock. It is the blending of the sap, or juices brought about by the junction of stock and scion, that contributes to a successful graft. There should be a good bud just above the cut at each end. The interior edges of the bark should be made to touch and remain in contact, for which purpose it is particularly necessary to use a sharp knife. Crown grafting is



Grafting. 1. A piece of scion wood, and, 2, scions ready for grafting. 3. Crown or rind grafting. 4. Splice. 5. Cleft. 6. Saddle. 7. Inarching. 8. Whip. 9. Notch. 10. Top graft, tool holding stock open for reception of scions. 11. Scions in position. 12. After application of wax

most generally practised upon the stocks of fruit trees of mature age. The stock is cut off cleanly, and any number of slips or scions, from four to six, inserted in the slits prepared for them. By this process it is possible to obtain three or four different varieties of grafted fruit from the same tree, but the process is not economical. Among all the different varieties of graft, the simple slip or tongue, with the stem of a scion suitably prepared, is the one which gives the best results. See Gardening.

Grafting. Transference of portions of skin from one area to another to replace skin destroyed by burn or injury. The method was introduced by Reverdin in 1869. His plan was to remove a number of small pieces of cuticle and cutis, the upper layers of the skin, from the healthy area, which were then dotted over the denuded area, thus serving as centres of repair. In Thiersch's method large

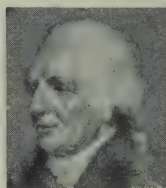
strips of cuticle are applied to the raw surface. In the Wolfe graft the whole thickness of the skin is employed. Bone-grafting has also been applied with success in modern surgery. See Surgery.

Grafton. Town of New South Wales. It stands on the Clarence river, 45 m. from its mouth, and is the chief port of the Northern Rivers dist., 350 m. N. of Sydney. It has bacon factories, creameries, sawmills, and tanneries. The centre of a fertile district devoted to dairying and horsebreeding, it produces also sugar, maize, oranges, and timber. It is the seat of an Anglican and a Roman Catholic bishop. Coal has been discovered in the neighbourhood. Pop. 5,888.

Grafton, DUKE OF. English title borne by the family of FitzRoy since 1675. Henry, son of Charles II by Barbara Villiers, duchess of Cleveland, was called FitzRoy and made duke of Grafton in 1675. He was killed in 1690 whilst fighting in

Ireland for William of Orange. His descendant, Augustus Henry, the 3rd duke, figured in the politics of the 18th century, and from him the later dukes descend. These include the 7th duke, who was wounded at Inkerman, and became a general, and who died Dec. 1918. The duke's eldest son is known as earl of Euston, and his chief seat is Euston Hall, Thetford. His estates are mainly in Suffolk and Northamptonshire.

Grafton, AUGUSTUS HENRY FITZROY, 3RD DUKE OF (1735-1811). English statesman. Born Oct. 1, 1735, he was educated at Westminster and Cambridge. He became duke in 1757 and was soon a prominent figure in politics. He opposed Bute, and in 1765 became secretary of state for the northern department, 1765. In 1766 he was made first lord of the treasury. He was head of the ministry during Pitt's illness, but resigned in 1770. He was made lord privy seal in 1771, and again in 1782. He died at Euston Hall, Suffolk, March 14, 1811.



Augustus H. FitzRoy, 3rd Duke of Grafton

Grafton Gallery. London picture repository. It is in Grafton Street, Piccadilly, and derives its name from the dukes of Grafton. The collections include works by Leighton and Poynter, and the art-treasures belonging to the Dilettanti Society, founded in 1734. In 1921 the interests in connexion with the Grosvenor Gallery were transferred here and exhibitions of the National Portrait and other societies organized.

Gragnano. Town of Italy, in the prov. of Naples. It is 20 m. by rly. S.E. of Naples, and 2 m. E. of Castellammare. It has many macaroni factories and is noted for the red wine it exports. Pop. 14,642.

Graham, GEORGE PERRY (b. 1859). Canadian politician. Born at Eganville, Ontario, of Irish descent, he began life as a teacher, but adopted journalism and in 1880 became editor of The Morrisburg Herald. In 1893 he moved to Brockville, where he was managing director of The Recorder, and in 1898 was returned to the Ontario legislature. Devoting himself to politics, he was secretary of the province in 1904-5, and in 1907 became leader of the opposition.

He was returned to the House of Commons at Ottawa as a follower

of Sir Wilfrid Laurier, and was appointed minister of railways and canals, holding that position until the Liberal defeat in 1911. Having lost his seat at Brockville, he was elected in 1912 for S. Renfrew. Prominent also in commercial life, Graham was president of The Montreal Herald and of other companies.

Graham, Sir Henry John Lowndes (b. 1842). British civil servant. The son of William Graham of Burntshiels, Renfrewshire, he was educated at Harrow and Balliol College, Oxford. In 1868 he became a barrister and from 1874-80 was secretary to the lord chancellor, Earl Cairns. From 1880-85 he was master in lunacy, and from 1885-1917 was clerk of the parliaments. In 1902 he was knighted. Sir Henry married firstly a daughter of the earl of Cranbrook and secondly a daughter of the marquess of Northampton. His eldest son, Sir Ronald William Graham (b. 1870), entered the diplomatic service, and was appointed minister to the kingdom of the Netherlands in 1919.

Graham's second son, Captain Harry Graham, is known as a clever writer of skits and parodies. His works include *Ruthless Rhymes for Heartless Homes*, 1899; *Misrepresentative Men*, 1904; *Misrepresentative Women*, 1906; *The Bolster Book*, 1910; *Canned Classics*, 1911; and *Biffin and His Circle*, 1919.

Graham, Sir James Robert George (1792-1861). British politician. Born June 1, 1792, he was the eldest son of Sir James Graham, Bart., to whose title he succeeded in 1824. Educated at Westminster School and Christ Church, Oxford, he entered



Sir James Graham.
British politician.

Parliament in 1818 as M.P. for Hull in the Whig interest. In 1826, after an absence of five years, he returned to the House as M.P. for Carlisle, and was soon prominent among those who were advocating the reforms which were carried into effect between 1830 and 1836. In 1830 he was made first lord of the admiralty, resigning in 1834 because he disagreed with the proposals about the revenues of the Irish Church. Graham then gravitated to the Tories, and from 1841-46 was home secretary under Peel, this being the time when the letters of Mazzini and other political refugees were opened by his orders.

In 1852, with other Peelites, he joined the ministry as first lord of the admiralty, but he resigned in 1855 owing to censure about the conduct of the Crimean War. He died Oct. 25, 1861. See *Life*, C. S. Parker, 1907.

Graham, Robert Bontine Cunningham (b. 1852). British author, traveller, and politician. Belonging to an old Scottish family, he derived his literary tastes from his mother, a sister of the 14th Baron Elphinstone. Educated at Harrow, he engaged in cattle farming in Mexico and the River Plate, was Radical M.P. for N. Lanarkshire, 1886-92, wrote much on social subjects, travel, and topography, but is best known as a writer of vivid short stories.

Following his *Notes on the District of Menteith*, 1895, and *Father Archangel of Scotland and other Essays*, written with his wife, 1896, came *Aurora la Cujini*, 1898, a realistic sketch of a bull fight and a dancing hall in Seville; *Mogreb el Acksa, a Journey in Morocco*, 1898; *The Ipané*, 1899; *Thirteen Stories*, 1900;



Robert Bontine Cunningham Graham
Hoppt

A Vanished Arcadia, 1901; *Success*, 1902; *Life of Hernando de Soto*, 1903; *Progress*, 1905; *His People*, 1906; *Faith*, 1909; *Hope*, 1910; *Charity*, 1912; *A Hatchment*, 1913; *Life of Bernal Diaz del Castillo*, 1915; *A Brazilian Mystic*, 1920.

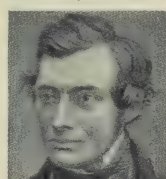
Graham, Stephen (b. 1884). British author and traveller. Attracted to Russia by the spirit of Russian literature, he travelled much in that country and gained an intimate insight into the lives of the people. In 1914 he travelled in Central Asia, in Egypt and the near East, 1915, and in Norway and Murmansk, 1916. Returning to England, he joined the Scots Guards, with whom he served 1917-18. His books include *A Vagabond in the Caucasus*, 1911; *Undiscovered Russia*, 1912; *A Tramp's Sketches*, 1912; *Changing Russia*, 1913; *With Russian Pilgrims to Jerusalem*, 1913; *With Poor Immigrants to America*, 1914; *The Way of Martha and the Way of Mary*, 1915; *Through*



Stephen Graham.
British author.
Russell

Russian Central Asia, 1916; *Priest of the Ideal*, 1917; *Quest of the Face*, 1918; *A Private in the Guards*, 1919; and *Children of the Slaves*, 1920, a study of the American negro question.

Graham, Thomas (1805-69). British chemist. Born at Glasgow, Dec. 21, 1805, and educated at



Glasgow and Edinburgh Universities, in 1837 he was appointed professor of chemistry at University College, London. He held this office until in 1855 he

became master of the Mint. He was the first president of the Chemical Society, founded in 1841. Graham's scientific reputation rests upon important investigations into the diffusion of gases and liquids. He died in London, Sept. 11, 1869.

Grahame-White, Claude (b. 1879). British aviator and aeronautical engineer. Born Aug. 21, 1879, he was educated at Bedford Grammar School. After establishing a motor engineering business in London, he became interested in aeronautics in 1909, making his earliest flights in France, and was the first Englishman to be granted an aviator's certificate. He started a school of aviation at Paris in 1909, and in 1910 won for Great Britain the international Gordon Bennett aeroplane race in America. He formed the Grahame-White Aviation Co., which became proprietors of the Aerodrome, at Hendon.



C. Grahame-White.
British aviator.
Elliott & Fry

On the outbreak of the Great War he was appointed flight-commander on special service in the R.N.A.S., but he resigned in 1915 to superintend the carrying out of government contracts for building aeroplanes. He was the author of *The Story of the Aeroplane*, 1911; *The Aeroplane, Past, Present, and Future*, 1911; *The Aeroplane in War*, 1912; *The First Airways*, their Organization, Equipment, and Finance, 1918.

Grahame-White. Trade name of various aeroplanes designed by the Grahame-White Aviation Co. They were extensively flown at Hendon Aerodrome, London, for instructional purposes during the Great War.

Graham Land. Part of the Antarctic continent. It lies due S. of Tierra del Fuego, N. of Alexander I Land and S. of Danco Land. Discovered by John Biscoe, a British mariner, in 1832, the islands lying off its N. coast were named after him. It is a mountainous tract, desolate and ice-bound. Nordenskjöld, the explorer, remained two years here in 1901-3, and it was visited by Charcot in 1904-5. On the W. coast a meteorological station was erected at the expense of the Argentine Republic. See King Oscar II Land.

Graham Prize. Prize for naval history, founded in 1909 by Lady Graham in memory of her husband Admiral Sir Wm. Graham. It is given to the cadet of the 4th, 5th, or 6th term at the Royal Naval College, Dartmouth, who obtains highest place in a voluntary examination in a special period of naval history.

Grahamstown. City of S. Africa. In the Cape prov., it is the capital of its eastern portion, in what is called the Albany district. It stands on the slopes of the Zuurberg Mts., 40 m. by rail from the sea at Port Alfred and 106 m. from Port Elizabeth. The chief buildings are the Anglican and Roman Catholic cathedrals, the town hall, a Gothic building completed in 1882, with public library and art gallery, and a museum. The Anglican cathedral in Church Square, partly designed by Sir Gilbert Scott, has some interesting decorations. There are several other churches, a synagogue, etc. The Albany Hall, the court house, and the botanic gardens covering 100 acres may be mentioned. Here are the Albany General Hospital and other hospitals. Educational institutions include the Rhodes university college, founded in 1904: and S. Andrew's College, a public school for boys.

Oatlands is a suburb, and near the town is a racecourse. Grahamstown has a trade in wool, and is also a health resort. Founded in

1812, it was for many years an important military station. It was named after Col. John Graham, a leader among the early settlers. Pop. 14,000.

Graian Alps. Section of the Western Alps, lying between S.E. France and N.W. Italy. Running from N. to S. from the valleys of the Isère and Dora Baltea in the N., to those of the Arc and Dora Riparia in the S., they culminate in the Gran Paradiso (13,324 ft.) and the Grivola (13,022 ft.).

Grail, THE HOLY. Name given in legend to the cup used by Christ at the Last Supper. Several versions of the story of this vessel exist, some saying that it came into the hands of Joseph of Arimathea, who used it to collect the Blood which flowed from Christ on the Cross. By other authorities it is described as the sacred cup from which Christ drank while hanging on the Cross. It is sometimes called the San (Saint) Graal or Greal. Joseph of Arimathea is reported to have brought it to England, but later it is said to have been carried to India.

In the *Morte d'Arthur* of Sir Thomas Malory (15th century), the Siege (seat) Perilous at the Round Table is reserved for the perfect sinless knight who shall achieve that quest of the Grail; and there on the day on which that knight, Galahad, who was of king's lineage and of the kindred of Joseph of Arimathea, took his seat it was told to Arthur that: "This day the San Grail appeared in thy house, and fed thee and all thy fellowship of the Round Table." After the Holy Grail has appeared, the knights set off on that quest which but one can achieve, and which marks the breaking up of the fellowship.

In another form of the legend—that of which Perceval (*q.v.*) is the central figure—the Grail is seen in a chapel belonging to the castle of King Fisherian, and evil falls upon the king and his land because the knights to whom a sight of it

is granted fail to say a certain word. In the Germanised form of the story, the Grail is not a dish or a cup, but a stone, while in the Welsh tale of *Peregrin*, which some authorities regard as the original (*Studies in the Arthurian Legend*, J. Rhys, 1891; and *Myths of the Celtic Race*, T. W. Rolleston, 1912), there

is no Grail at all, but only the quest.

In the 12th century Robert de Borron treated the subject in his *Joseph of Arimathea*. About the same time Chrétien de Troyes wrote his poem, *Perceval le Gallois*, and about the end of the century came another version in the *Parzival* of Wolfram von Eschenbach, who said that he had received the substance of his story from a Provençal poet. In the early part of the 13th century an unknown author composed the romance of *Perceval le Gallois*, ou le Conte de Graal (Eng. trans. The High History of the Holy Grail, Sebastian Evans, 1898). The etymology of the word grail (old Fr. *grail*, *greal*) is uncertain. It is suggested that it is a corruption of late Lat. *gradale* or *cratus* (*cf.* crater), both meaning bowl, dish. San Gréal was later corrupted into Sang Réal, the True Blood of Christ. See *Arthur*; *Morte d'Arthur*.

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Grain (Lat. *gramum*). Literally a small, hard seed. From this it has become a synonym for corn, especially when used in a business sense. See *Barley*; *Oats*; *Wheat*.

Grain. Unit of weight. The average weight of a grain of corn taken from the middle of a ripe ear; the 1/7000 part of a pound avoirdupois. In Troy weight, 480 grains equal an ounce, while 24 grains are called a pennyweight.

Grain, ISLE OF, OR ST. JAMES. Parish and village of Kent, England. Standing at the junction of the Thames and the Medway, it was formerly an island, but has now roadway communication with the mainland. Here fortifications guard the approaches of the Thames and the Medway.

Grain, RICHARD CORNEY (1844-95). British entertainer. Born Oct. 26, 1844, he was called to the bar in 1866, but four years later joined the German Reed Company, with which he was associated until his death, March 16, 1895. He wrote over fifty entertainments for the company, and many songs and sketches, whilst Corney Grain, by Himself, appeared in 1888.



Grahamstown, South Africa. The principal square with the Town Hall, and, on the left, the Anglican cathedral



Corney Grain.
British entertainer
Elliott & Fry

Grain Coast. Name formerly applied to a portion of the W. African littoral between the island of Sherbro and the Ivory Coast. The greater part is now under the control of the republic of Liberia. It was noted for melegueta pepper, or grains of Paradise (*q.v.*), hence its name. See Liberia.

Graincourt. Village of France, in the dept. of Nord. It is 6 m. W.S.W. of Cambrai, and lies slightly off the Bapaume-Cambrai road. It was captured on Nov. 20, 1917, by the British 62nd (W. Riding) division. Retaken by the Germans in March, 1918, it was recaptured by the British, Sept. 27, 1918. See Cambrai, Battles of.

Graining. Art of imitating woods such as oak, mahogany, walnut, etc., by means of paint. Upon a ground colour is painted a coat of graining colour, and while this is still wet it is manipulated in such a manner as to remove part of it and expose the ground beneath. Oak graining is the most popular, probably because of the remarkable resemblance to nature which a skilled craftsman can produce. In old houses will often be found examples of graining in excellent condition after more than a quarter of a century. Ability to grain well was at one time the hallmark of the expert painter and decorator, but the teaching of Ruskin, who called graining a "sham," gave the art a great setback from which it is now slowly recovering.

Grain of Paradise (*Anomum*). Seed of two species of this genus, which is included in the natural order Scitamineae. Both are perennial herbs, and natives of W. Africa. *A. granum-paradisi* has lance-shaped leaves and whitish flowers; *A. melegueta* more slender leaves and pale pink flowers. The seeds are warm to the taste and have a suggestion of camphor. They are illegally used by brewers and distillers to make the strength of their productions appear greater. See Cardamom.

Grallatores (Lat., stilt-walker). Name formerly applied to the long-legged wading birds, but now obsolete. The old method of classifying birds according to their habits, as waders, perchers, swimmers, etc., was unscientific and misleading, since birds of very different anatomical structure may have similar habits. The old order Grallatores is now broken up into Herodii and Grallae.

Gram, GREEN (*Phaseolus mungo*). Herb of the natural order Leguminosae, a native of India. Commonly cultivated in India and the Nile Valley, it has a considerable number of varieties, some

dwarf and erect, others climbing. It is a hairy plant, with the leaves divided into three oval leaflets. The small whitish flowers are succeeded by hairy, nearly cylindrical pods containing the small seeds which are used as food.

Gramineae. Large natural order of herbs of the grass family. It includes over 3,000 species, natives of all climates. They are mostly tufted, with cylindrical, jointed stems and narrow, alternate leaves. The flowers usually consist of two minute scales enclosed in a boat-shaped glume, together with three stamens and a single-celled ovary. The fruit is a membranous envelope, enclosing the single albuminous seed. Most of them produce nutritious herbage and seeds, which form the principal foods of man and his herds and flocks. The numerous meadow-grasses mainly consist of species with flat leaves that do not roll up in dry weather. The order contains all the valuable cereals—wheat, oats, rye, rice, etc., sugar-cane and bamboo.

Grammar (Gr. *grammatikē*, the science of letters, *grammata*). The term, originally meaning simply the art of reading, was extended to include the study of literature and all branches of learning generally. In its more restricted sense, it is the study of the forms and syntax of a language, the art of speaking



Grain of Paradise. Left, plant with flower; right, seed pod and section

and writing correctly. But the rules of grammar are not unalterably fixed and final; they merely represent the practice followed in speaking and writing by educated persons at a certain time. Much of what is now called bad grammar (e.g. I don't

know nothing) was once considered perfectly correct. The best authors of the most flourishing period of a literature did not write according to rules; rather, their writings furnished the material on which the rules of the grammarians were based.

Grammar early engaged the attention of the learned in both east and west. The founders of the science in the west were the Greeks. The sophists and Plato first directed attention to the formation and derivation of words, Aristotle discussed the parts of speech, and the Stoics invented names for cases. The great Alexandrian

grammarians and critics drew up the rules of Greek grammar from the Homeric poems and other masterpieces of Greek literature, and most of their rules still find a place in modern school books.

In the first century B.C. Dionysius Thrax brought out the first complete Greek grammar, and Apollonius Dyscolus (2nd century A.D.) first definitely separated forms from syntax. The Romans made no original contributions to the science, their chief merit being that they translated the Greek terminology and introduced it into Europe. The two most famous Roman grammarians were Aelius Donatus (4th century A.D.) and Priscian (6th century). In the Middle Ages, and even in the Renaissance period, little progress was made, and it was not until the discovery of Sanskrit in the 18th century that an exact science of grammar became possible. See Language; Phonetics.

Gramme. Unit of weight in the metric system. It is the thousandth part of the weight of a litre of distilled water. It equals 15.43248 grains. See Metric System.

Grammichele. Town of Sicily, in the prov. of Catania. It stands on an eminence, 1,560 ft. above sea level, 55 m. by rly. (33 m. direct) S.W. of Catania. Clay, stone, and marble quarries are worked, and a trade is carried on in grain, cotton, oil, wine, fruit, and cattle. It was founded in 1693 to replace Occhiala, which had been utterly wrecked by an earthquake. In the vicinity is a cave altar to Demeter. Pop. 17,463.

Grammont (Flem. *Geerardsbergen*). Town of Belgium, in the prov. of E. Flanders. Situated on the Dendre, 23 m. S.S.E. of Ghent, it has a Gothic 15th century town hall with four corner turrets and, under the balcony, a fountain resembling that of the Mannikin at Brussels. In the church of S. Barthélemy are two paintings by De Crayer. The rly. line from Alost to Mons passes through Grammont. Pop. about 12,000.

Gramont, PHILIBERT DE (1621–1707). French courtier, subject of the Mémoires written by Anthony Hamilton (*q.v.*). Of noble descent, Gramont was educated for the Church, but, turning to the army, served with distinction under Condé and Turenne in Flanders and Spain. Banished from the French court on account of an intrigue with one of the mistresses of Louis XIV, he came to London, 1662, and mixed freely in the court of Charles II. There he married Elizabeth Hamilton, sister of Anthony. His exile ended in 1664, but he

revisited England on diplomatic and court missions in 1670-71, 1676, and 1688. He died in Paris, Jan. 10, 1707.

The *Mémoires de la Vie du Comte de Gramont*, published in 1713 as having been dictated by the subject himself, were actually written by his brother-in-law, and give not only a vivacious picture of Gramont, but also an intimate account of the more scandalous aspects of the court of Charles II. The best modern edition, based on that edited by Sir Walter Scott, 1811, is by C. Goodwin, 2 vols., 1903.

Gramophone (Gr. *gramma*, letter; *phōnē*, sound). Talking-machine allied to the phonograph and based upon the same general principles. The fundamental constructional difference between the two consists in replacing the hollow cylindrical record of the phonograph by a disk upon which the sound record is cut as a spiral. The record is mounted upon a spindle rotated uniformly, usually by a spring-motor controlled by a ball-governor. The chamber or sound-box, containing the diaphragm carrying the stylus, is supported by a tubular arm delicately poised on a bracket so that it can be readily turned aside and follow with ease the movements of the stylus in the spiral track. See Phonograph; Talking-machine.

Grampians. Mt. range in Scotland. They dominate the centre of the country, serving as the barrier between the Highlands and the Lowlands. They stretch from the coast of Aberdeenshire in a S.W. direction to Dumbartonshire, touching also the counties of Banff, Inverness, Forfar, Perth, Stirling, and Argyll. Their highest point is reached in Ben Nevis, but there are other peaks over 4,000 ft. high, and a number over 3,000. Among the most important are Ben Macdhui, Ben Lawers, Ben Lomond, Cairngorm, Ben Alder, Ben Cruachan, and Cairntoul. Many of the rivers of Scotland flow from the Grampians; some, e.g. the Forth and Tay, southwards; others, the Don and Dee, northwards. The mts. enclose some of the finest scenery in Britain, examples being the stretch along the Dee in Aberdeenshire, the wild country at the W. end of the Caledonian Canal, the wooded passes of Perthshire, and the mts. and lochs that beautify that co. and also Argyllshire. In general the N. parts of the range are wild and barren, and there are extensive deer forests.

Grampians. Mountain range of W. Victoria, Australia. It contains the source of the river Glenelg, and Mt. William (4,500 ft.) is its highest summit. The N.E.

extension of the range is called the Pyrenees.

Grampound. Market town of Cornwall. It stands on the Fal, 9 m. from Truro and 6 m. from St. Austell, and has a station (G.W.R.) at Grampound Road, 2 m. away. Its old town hall still stands, and the place is mainly interesting on account of its past. It became a town in the Middle Ages, and in 1553 began to send two members to Parliament. It had a mayor and corporation, while a small number of persons elected the two members. These men's votes were so easily and openly bought that the affair became a scandal even in the 18th century. In 1818 an inquiry was held, and in 1821 the borough was disfranchised. A little later it lost its rights as a borough, and is now only a village and parish.

Grampus (*Orca gladiator*). Large and ferocious dolphin which



Grampus. Specimen of the large and pugnacious dolphin

attains a length of 20 ft. It ranges all over the world, and has even

been found in the Thames at Chelsea. It preys upon fishes and seals, and has been known to attack the whale. The word grampus is a corruption of Lat. *crassus* or *grandis piscis* (coarse or large fish), cf. Span. *gran pez*. See Dolphin.

Gran or **GARAM**. River of Hungary. Taking its rise near the Low Tatra, it flows W. and then S., reaching the Danube just below Esztergom, after a course of about 150 m.

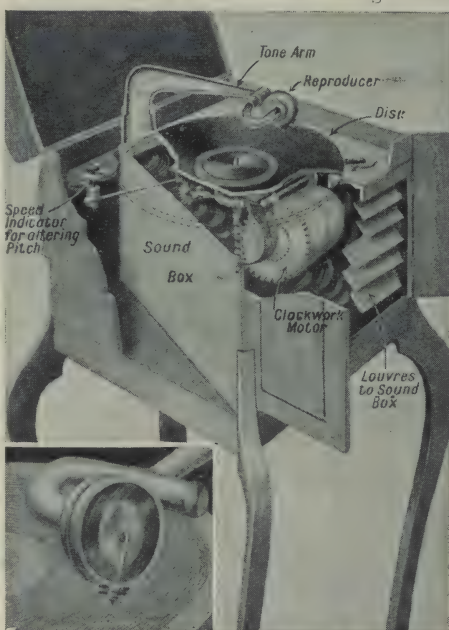
Gran. Alternative name for Esztergom (*q.v.*), a town of Hungary on the Danube, 25 m. N.W. of Budapest.

Granada. Name of a Moorish kingdom in Spain that lasted from 1238 to 1492. The city of Granada and the district around it fell into the power of the Moors and was long ruled by the caliphs of Cordova. It became a flourishing place, and was at one time the capital of an independent principality. The kingdom, however, dates from about 1238, and here a certain Moor began to rule over Granada, Malaga, and other places, making the former his capital.

Gradually the Christians won back Spain from the Moors, and later in the 15th century Granada alone remained to the latter. Ferdinand and Isabella at length turned their arms against it, and, owing to rivalries among the ruling

family, Granada fell an easy prey. The Moors were beaten in battle; their last ruler, Boabdil, formally resigned his kingdom to the Christians, who, Jan. 2, 1492, entered the city of Granada. Thenceforward the kingdom formed part of Spain. See Alhambra; Moors; Spain: History.

Granada. Maritime prov. of Spain, in Andalusia. Bounded S. by the Mediterranean, it formed part of the old Moorish kingdom. The surface is mountainous, and it contains, in the Sierra Nevada, the highest points of Spain, one of the most picturesque regions in Europe. Well watered, chiefly by the Jenil and its tributaries, it is extremely fertile.



Gramophone. Diagram illustrating the principal parts and the method of reproducing sound. Vibrations of diaphragm on reproducer, shown inset, are conveyed through the tone arm into the sound-box, whence they issue through louvres, shown broken off to expose interior of sound-box



Granada. Map of the southern Spanish province, which contains the highest points in Spain

Warm in the plains and cool in the hills, its products include those of alpine and sub-tropical regions. Sugar-canes, beet-roots, cereals, fruit, cotton, and flax are grown, and silk, wine and oil produced, and there are textile factories, tanneries, and iron works. There are various minerals and marble quarries, and precious stones are found. There are also several hot springs in the prov. Pop. 542,640.

Granada. City of Spain, capital of the prov. of Granada. It stands on the slopes of two hills and on the plain connecting them; 63 m. N.E. of Málaga.



Granada arms

Abundantly supplied with water, and having a delightful climate, this old Moorish city, the last seat of the Moslem rulers of Spain, is peculiarly interesting. It contains in the Alhambra (q.v.) a unique memorial of Moorish power and art.

The old town, Albaicin, which stands on a neighbouring hill, although the poorest part of the city and the dwelling-place of gypsies, is most picturesque. There are remains of the Moorish walls and towers, the Alcázar, the Casa del Cabildo (or old university), the water conduits and other buildings which once made Granada a great trading city and a seat of arts and learning. The more modern town contains the cathedral, public buildings, promenades, plazas, gardens, fountains, etc. It has many educational and philanthropic institutions, carries on a large trade in agricultural produce, and manufactures textiles, liqueurs, soap, and paper. In the *Capilla Real*, or Chapel Royal, is the sarcophagus of Ferdinand and Isabella, and in the convent of San Jeronimo lies

buried the great Captain Gonzalo de Cordova. Pop. 77,425.

On the invasion of the Iberian peninsula by the Saracens in the 8th century, some, mainly Syrians from Damascus, established themselves near the site of the ancient Iliberis. The settlement grew in importance, and during the Middle Ages became the wealthiest and

most splendid city in Spain. As the capital of the Moorish kingdom of Granada it flourished for centuries until the Moors began to give ground during the wars with Alfonso XI and Pedro the Cruel.

In 1482 Ferdinand and Isabella began their task of expelling the Moors from Spain, and in 1492 Boabdil, the last king of the Moors, was compelled to abandon his capital. The city thereafter declined in

prosperity and importance. Taken by the French in 1810 and 1823, it suffered from seismic disturbances in 1884-85, and a conflagration in 1890 damaged the Alhambra.

Granada. City of Nicaragua, Central America, capital of the dept. of Granada. It stands on Lake Nicaragua, 28 m. by rly. S.S.E. of Managua. Founded in 1523, the city is well built, and has fine churches and public buildings. It trades in dye woods, indigo, cocoa, wool, and hides, and manufactures footwear and gold-wire chains. There are large cocoa plantations in the environs. The city was partly burned down in 1855. Pop. 17,050.

Granadilla. Edible fruits of several species of *Passiflora* (passion-flowers), though the name properly refers to the large greenish-yellow fruits of *P. quadrangularis*. These are about 6 ins. in diameter, with sweet, slightly acid, purple pulp. It is a native of Nicaragua, but is largely cultivated in the tropics. It has strongly scented white and red flowers.

Granard. Urban district and market town of Longford, Ireland. The station is Ballywillan, 3 m.

away. Much damage to the buildings here was done during disturbances in Nov., 1920. Pop. 1,530.

Granard, EARL OF. Irish title, borne since 1684 by the family of Forbes. Sir Arthur Forbes, a member of the Scottish family of that name, obtained a grant of land in co. Longford, and was made a baronet in 1628. His son, Sir Arthur (d. 1696), was made a baron, a viscount, and in 1684 an



Granada, Spain. The centre of the city and the cathedral, from San Jeronimo. Above, characteristic houses in the old town

earl. He fought for Charles II in Scotland, against the Commonwealth, and raised



Bernard Forbes,
8th Earl of Granard
Elliott & Fry

army, was made a baron of the United Kingdom in 1806. Bernard, the 8th earl, who succeeded in 1889, was master of the horse. The family seat is Castle Forbes, co. Longford, and the earl's eldest son is known as Viscount Forbes.

Granary (Lat. pl., *granaria*). Place for storing grain in bulk. In modern times the granary has been largely supplemented by the elevator. See Barn; Elevator.

Granby, MARQUESS OF. Title borne by the eldest son of the duke of Rutland, Granby being a village

in Nottinghamshire, not far from Belvoir. Its most notable bearer was the English soldier John Manners (1721 - 1770). The eldest son of the third duke, he was born



John Manners,
Marquess of Granby
After Reynolds

Aug. 2, 1721. Educated at Eton and Trinity College, Cambridge, his first military service was with Cumberland's army in the Jacobite rising of 1745. In 1758, during the Seven Years' War, he went to Germany in command of a brigade of cavalry, and in 1759 became commander of the British contingent, in which capacity he did brilliant work, notably at Warburg, Brückermühl, Gravenstein, and Wilhelmstahl. He returned home in 1763, and became commander-in-chief in 1766, his conduct in this position being attacked by Junius. For many years Granby was M.P. for Grantham, and he represented Cambridgeshire from 1754 until his death at Scarborough, Oct. 18, 1770. Granby is the marquess whose name is borne by many public houses, a tribute to his popularity in 1763.

Gran Chaco. Region of central S. America. See Chaco, el Gran.

Grand. River of U.S.A. Its headstreams rise in Iowa, and unite in Gantry co., Missouri, through which state the river flows

S.E. to its junction with the Missouri river near Brunswick. Its length is about 300 m.

Grand. River of Colorado and Utah, U.S.A. A headstream of the Colorado river, it rises in the Rocky Mts., and flows 350 m. S.W. to the Green river, which it joins in the S.E. of Utah, and has cut deep and precipitous cañons.

Grand. River of Michigan, U.S.A. Rising in Jackson co., in the N.E. part of the state, it flows W. and N. to Lansing, where it again follows a W. course, and enters Lake Michigan at Grand Haven. It is 280 m. long, and navigable for 40 m. up from its mouth.

Grand, SARAH. Pen-name of Frances Elizabeth McFall, British novelist. Daughter of Edward

Clarke, R.N., she was married at the age of 16 to Surgeon Lieut.-Col. McFall. Her first novel, *Ideala*, was written at the age of 26, but her reputation chiefly rests upon *The Heavenly*



Sarah Grand
Russell

Twins, 1893, memorable for its uncompromising handling of certain sex problems, a subject skilfully developed in *The Beth Book*, 1898. A lifelong supporter of the woman's movement, her other publications include *Babs the Impossible*, 1900, and *The Winged Victory*, 1916.

Grand Alliance. Name given to the alliance of European Powers against France in 1701. Louis XIV of France, refusing to recognize the treaties by which arrangements for a partition of the Spanish possessions had been made, accepted for his grandson the crown of Spain. To counter this, William III formed the alliance between the Empire, England, and Holland, who signed a treaty agreeing to compensate the emperor for the loss of Spain, on Sept. 7, 1701. The alliance, joined in 1702 by Prussia, and in 1703 by Portugal and Savoy, carried on the war of the Spanish Succession (*q.v.*).

Grand Bank. Submarine elevation, extending about 200 m. to 300 m. S. by E. of Cape Race, Newfoundland. The area is about 500,000 sq. m.; the depth varies from 10 to 160 fathoms. The waters swarm with fish, especially cod, and fishing is free. The season lasts from June to mid. Nov. See Fisheries; Newfoundland.

Grand Bassam. Port in the French colony of the Ivory Coast. It stands on the Gulf of Guinea, at

the entrance of a lagoon, which forms a well-protected harbour. It is the most important port in the colony, but trade is somewhat hampered, owing to the fact that Abidjan, the coastal terminus of the main line of rly., is situated on the adjacent mainland. Here is the headquarters of the customs administration. It was formerly the seat of the governor of the colony. Pop. 2,832.

Grand Canal. Main waterway of Venice. It winds through the city, in the shape of the letter S, and from it other canals branch in all directions. On its banks are most of the famous palaces of the city, and near it is the Piazza of S. Mark. The Rialto bridge crosses it. See Venice.

There is a Grand Canal in Ireland, extending from Dublin to Ballinasloe; this has a length of 80 m., and with its branches one of 146 m.

Grand Canal. Canal of China, stretching from Hangchow to Tientsin, a distance of 850 m. At Chinking, 280 m. from Hangchow, the Yangtze divides the canal into two portions. The construction of the middle section, from the Yangtze to the Yellow river, which was in use in 480 B.C., is attributed to the 6th century B.C. The S. section was added between A.D. 605 and 617, and the N. part, from the old bed of the Yellow river to Tientsin, was made between 1280-83.

Grand Cañon. Deep gorge in Arizona, U.S.A., cut by the Colorado river. It is the most remarkable of a series of cañons, extending for about 1,000 m. along the river's course, and presents a scene of unequalled natural grandeur and weirdness. The gorge extends for about 217 m., has a depth varying between 3,000 ft. and 6,000 ft., and a breadth of from 2 m. to 15 m. James White is said to have been the first to traverse the cañon, but the first authenticated passage was accomplished by Major J. W. Powell in 1869. See Cañon.

Grande Combe, LA. Town of France. In the dept. of Gard, it is 31 m. from Nîmes. The municipality includes La Levade and La Pise, as well as La Grande Combe proper. There are coal and other mines around the town, which is also known for its glass manufacture. Pop. 11,550.

Grand Cornier. Mt. of Switzerland, in the canton of Valais. Situated N. of the Dent Blanche, near the Matterhorn, it reaches an alt. of 13,020 ft. The ascent by the Col de Bricolla is difficult, but not dangerous; that from the Col du Grand Cornier (11,628 ft.) is longer and more difficult. See Alps.

Grandcourt. Village of France, in the dept. of Pas-de-Calais. It is 6 m. S.W. of Bapaume, lying slightly off the Albert-Bapaume road. It was captured by the British Feb. 7, 1917. Retaken by the Germans in Mar., 1918, it was recovered by the Allies in Aug., 1918. See Ancre, Battle of the; Somme, Battles of the.

Grand Duke. Title ranking above that of duke. It first appeared in 1557, when Pius V gave it to the duke of Tuscany. It was held by the Medici family and later by the Habsburgs, who retained it after they had been deprived of Tuscany in 1859. The other grand dukes mainly date from the reorganization of Europe in 1815. There were several in Germany before 1918—Saxe-Weimar, Baden, Oldenburg, the two Mecklenbergs, and Hesse-Darmstadt. The ruler of Luxembourg is called the grand duke or grand duchess, and the word was used to translate the title borne by members of the imperial family of Russia before 1918. See Duke.

Grandee (Span. *grande*). Spanish title. Borne by the highest nobles, it carried many privileges. Grandees were exempt from taxes, and from arrest except by special warrant from the king, and could even join the service of the king's enemies. They were allowed to remain covered in the king's presence. Their privileges were gradually curtailed, and Joseph Bonaparte abolished the title. It was revived in 1834, though shorn of all its privileges.

Grand Falls. Cataract of Labrador. It is on the Grand or Hamilton river, about 252 m. W. by S. of Hamilton Inlet. It descends over 315 ft., has a breadth of 200 ft., and is one of the finest cataracts in N. America.

Grand Falls. Town of Newfoundland, on the Exploits River, about 22 m. from its mouth. Connected by railway with the port of Botwood. It takes its name from the falls, and owes its origin to the development of the water power there by the Anglo-Newfoundland Development Company, Limited, whose pulp and paper mills, commenced in 1906, and completed three years later, are among the largest in the world. At Grand Falls there is a town hall, five churches, club, and other public buildings. Pop. 4,000.

Grand Falls OR COLEBROOKE. Town of New Brunswick, Canada, capital of Victoria co. It stands on the St. John river, near its falls, 200 m. N.W. of St. John, and is served by the G.P.R. Situated in a lumbering region, there are saw, grist, and lumber mills. Pop. 1,280.

Grandfather Clock. Popular term for clocks, usually eight-day, with cases to contain the long pendulum. They were introduced in England towards the end of the 17th century, and for some time were made with the dome typical of the bracket clock from which they were developed. Early specimens were made of oak, and had brass dials, often engraved. Succeeding types were made of walnut and mahogany, and had white dials frequently with a painted device showing the changes of the moon. Early grandfather clocks, especially those dated c. 1680-1700, are prized by collectors. English 18th century specimens are numerous. See Clock; Horology.

Grand Fleet. Name given to Great Britain's principal naval force during the Great War. Numbering about 400 ships, it was based upon Scapa Flow in the Orkneys; Invergordon in Cromarty Firth; and Rosyth in the Firth of Forth.

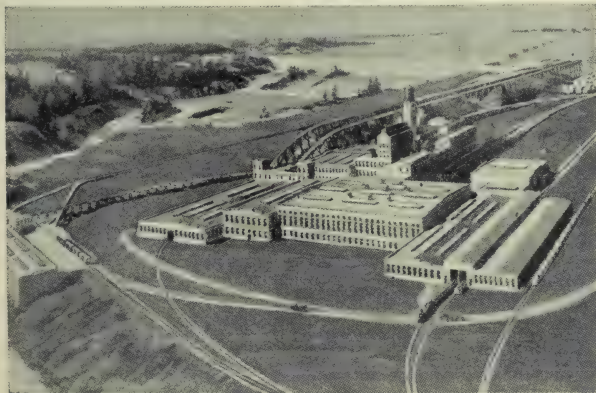


Grand Falls, New Brunswick. The falls of the St. John River

The Harwich force, but not the Dover Patrol, came under it. During the last year of the war an American battle squadron of five ships formed part of it. Just previous to the war the Grand Fleet was commanded by Sir G. A. Callaghan, who was replaced by Sir John Jellicoe immediately war was declared. Upon the latter becoming first sea lord in Nov., 1916, Sir David Beatty was appointed commander-in-chief of the Grand Fleet, and he retained that post until the end of the war, when the Grand Fleet was dispersed. See Navy, British.

Grand Forks. City of North Dakota, U.S.A., the co. seat of Grand Forks co. It stands at the union of the Red Lake river with the Red river of the North, 82 m. N. of Fargo, and is served by the Great Northern and the Northern Pacific Rlys. It contains S. Bernard's College and Grand Forks College, and about 2 m. from the city is the suburb of University, the seat of the state university. Grand Forks is a distributing centre for the surrounding agricultural district, trades largely in lumber, wheat, and flour, and manufactures lumber products, bricks, machinery, grain elevators, carpets, rugs, and furniture. Settled in 1871, it received a city charter in 1881. Pop. 16,342.

Grand Island. City of Nebraska, U.S.A., the co. seat of Hall co. On Platte river, 155 m. W.S.W. of Omaha, it is served by the Union Pacific and other rlys. It contains Grand Island College, a sailors' and soldiers' home, and a public library. A live-stock trade is carried on and beet-sugar production is an important industry. The city has canneries, rly. workshops, broom and wire-fence factories, and brick-works. Grand Island was settled in 1857. Pop. 11,505.



Grand Falls, Newfoundland. The pulp and paper mills of the Anglo-Newfoundland Development Company, where the paper for The Daily Mail and The Daily Mirror is made

Grandison, Sir Charles, The History of. Novel by Samuel Richardson first published anonymously in 1753-54. The story is told in a lengthy series of lengthy letters. Purposing to present a character of ideal human goodness, the author created in Sir Charles a prig rather than a hero.

Grand Junction Canal. Artificial waterway of England. It stretches from the Oxford Canal at Braunston, Northamptonshire, to the Thames at Brentford, Middlesex, a distance of 93½ m.; with its branches it has a total length of 140½ m. It passes through the counties of Northampton, Bucks, Hertford, and Middlesex, and has 98 locks. It forms an important canal section of the proposed great system for England. See Canal.

Grand Jury. In English law, a body of men, fixed between 12 and 23, who at the assizes and quarter sessions are summoned to inquire into the charges against supposed criminals. They decide whether or not there is a *prima facie* case against a prisoner or defendant. The jury is the descendant of the jury of presentment that existed under Henry II and probably earlier. The procedure is for the grand jury, having been first charged by the judge, to examine the various bills of indictment; and to declare each a true bill or no true bill. Grand jurors must be men of standing of the county and are summoned by the sheriff. In 1917 an Act was passed suspending grand juries for the period of the war, and this suspension continued until 1922. See Jury.

Grand National, THE. Principal cross-country horse-race. Inaugurated in 1839, it takes place annually at Aintree, near Liverpool, on the Friday of the Liverpool Spring Meeting. The course is 4 m. 856 yds., and includes 30 jumps. The water jump is 15 ft. broad, and two other difficult obstacles are Valentine's and Becher's Brooks. The race was suspended from 1916-18 inclusive, through the Great War, a substitute race, called the Racecourse Association Steeplechase in 1916, and the War National Steeplechase in 1917 and 1918, being run at Gatwick. Four horses have twice won the Grand National, Abd-el-Kader, 1850 and 1851; The Lamb, 1868 and 1871; The Colonel, 1869 and 1870; and Manifesto, 1897 and 1899. Poethlyn won it in 1919, and was also successful in the substitute race in 1918. The highest weight carried to victory is 12 st. 7 lb. this being achieved by Cloister, 1893, Manifesto, 1899, Jerry M., 1912, and Poethlyn, 1919.

Grandpré. Town of France, in dept. of Ardennes. It is on the Aire, 36 m. S.S.E. of Mézières. Its 13th century church, with the rest of the town, was much damaged in the Great War. The town was partly captured by the 77th U.S. division on Oct. 15, 1918, and a severe struggle ensued for its citadel and hills to the N. See Argonne, Campaigns of the.

Grand Pré. Village in King's co., Nova Scotia. Situated on the shores of the basin of Minas, 46 m. N.W. of Halifax, it was the scene



Grand Pré, Nova Scotia. The Evangeline statue unveiled in 1920

of the surprise, defeat, and capture of Col. Noble's Massachusetts regiment by the French in 1747, and of the expulsion of the Acadians by the British in 1755 (see Montcalm and Wolfe, F. Parkman, 1884), which forms the theme of the first part of Longfellow's poem *Evangeline* (q.v.). By a purchase the C.P.R. secured control of the well beside the willows on the farm tradition associates with Evangeline's story, and here in September, 1920, Lady Burnham unveiled a statue of Evangeline. It stands in a park laid out with willows, poplars, and flowers, and containing a Norman gateway, and, thanks to the cooperation with the C.P.R. of the French-Canadian Société de l'Assomption, a chapel of contemporary architecture.

The statue in bronze, by Henri Hébert, was cast in Paris and fashioned from a small model of burnt clay by the artist's father, Philippe Hébert, the sculptor, a descendant of Louis Hébert. Louis emigrated from France in the time of Henry of Navarre, with other members of his family, dyked and reclaimed the marshlands of Minas Basin, gave a name to the valley which was later corrupted into Bear River, and shared the exile of the Acadians in 1755.

Grand Prix. International race for three-year-old horses run at Longchamps over a distance of 1 m. 7 fur. An English horse named The Ranger won the race on its inauguration in 1863, and among other successful English competitors were Robert the Devil, 1880; Paradox, 1885; Minting, 1886; Spearmint, 1906; Galloper Light, 1919; Comrade, 1920. The race was suspended from 1914-18, inclusive, through the Great War.

Grand Prix de Rome. State prize for composition at the Paris Conservatoire which is competed for annually in July, the result being announced in Nov. The successful candidate is crowned with laurel, proclaimed *lauréat*, and sent to Rome to study for four years, during which time he receives an income from the French government. The *proximo accessit* receives a gold medal. A similar Prix de Rome at the Brussels Conservatoire is awarded at intervals of two years.

Grand Rapids. City of Michigan, U.S.A., the co. seat of Kent co. On the Grand river, at the head of navigation, it is 65 m. W.N.W. of Lansing, and is served by the Michigan Central and other rlys. It contains a federal building, the city hall and the county court house, and has a number of benevolent institutions. Grand Rapids trades extensively in the produce of the agricultural and fruit-growing district in which it stands, and manufactures lumber products, furniture, carpets and rugs, carriages, agricultural implements, and knitted goods. In the locality gypsum is worked. Founded in 1833, it was incorporated five years later, and granted a city charter in 1850. In 1905 it was reincorporated. Pop. 135,040.

Grand Rapids. City of Wisconsin, U.S.A., the co. seat of Wood co. On the Wisconsin river, 90 m. N.N.W. of Madison, it is served by the Chicago, Milwaukee and St. Paul, and other rlys. The river divides the city into two parts, connected by a fine bridge. A rly. centre and the distributing point for a large district, Grand Rapids has machinery works, a foundry, and lumber, paper, pulp, furniture, and wagon manufactures. Its buildings include a city hall, court house, hospital, and public library. A city charter was granted in 1860. Pop. 6,521.

Grand Remonstrance, THE. In English history, the statement of the case of the Commons against Charles I. It was drawn up by the Long Parliament in 1641, immediately before the outbreak of the Civil War. The first part detailed the acts of misgovernment

committed by the king after his accession; subsequent sections dealt chiefly with suggested remedial measures, such as the adoption of safeguards against Roman Catholicism, guarantees for the better administration of justice, and the prevention of the employment as ministers of worthless persons. After acrimonious debate the Grand Remonstrance was passed by 159 votes to 148, and was presented to the king, Dec. 1, 1641.

Grands Mulets. Rocky ridge on the N. slope of Mont Blanc. It lies at an alt. of 10,030 ft. on the track from Chamonix to Mont Blanc. See Mont Blanc.

Grandson OR **GRANSON.** TOWN of Switzerland, in the canton of Vaud. It stands on the lake of Neuchâtel, 3 m. by rly. N.W. of Yverdon. It has an ancient Romanesque church, recently restored, and a fine castle dating from the 11th century, long the seat of the baronial family of Grandson. Captured by the Bernese in 1475, it was taken in Feb., 1476, by the duke of Burgundy, whose massacre of the garrison led to the famous battle of March 3, 1476, near the town, in which Charles the Bold was disastrously defeated by the Swiss. Pop. 1,334.

Grand Trunk Railway. Canadian railway, now part of the National Transcontinental system, and owned by the state. It was formed in 1852, being an amalgamation of various small lines, including the St. Lawrence and Champlain, the oldest line in Canada, St. Lawrence and Atlantic, Guelph and Sarnia, and Grand Junction. Other lines were added by purchase or construction.

About 1900 it was decided to make the system a trans-continental one, and by an arrangement with the Dominion Government the Grand Trunk promoted the Grand Trunk Pacific line. The guarantees given in this connexion were a heavy charge on the company's resources, and this, coupled with the difficulties caused by the Great War, was a serious check to its development. The Dominion Government, therefore, decided to acquire the system, and to this end an Act was passed in 1919.

When taken over in 1920 the company had a mileage of 3,567 in Canada and 1,558 in the U.S.A. The system starts from Portland, Maine, and from Rousses Pt. on Lake Champlain. A line from Quebec joins these two and the main line passes to Montreal by the Victoria Jubilee Bridge. From Montreal it goes to Toronto, and thence through Ontario to various ports on Lake Huron and on Georgian

Bay. The company had steamers on the Great Lakes and elsewhere and headquarters at Montreal. The total capital was about £85,000,000. See Canada.

Granet, SIR WILLIAM GUY (b. 1867). British rly. manager. Born Oct. 13, 1867, he was educated at



Sir W. Guy Granet,
British railway
manager
Russell

Rugby and Balliol College, Oxford, and was called to the bar in 1883. He became secretary of the Railway Companies' Association in 1900, assistant-general manager of the Midland Rly., 1905, and general manager in 1906. During the Great War he was director-general of military rlys. in 1916 and director-general of movements and rlys. in 1917, with a seat on the Army Council. In Dec., 1918, he retired from the general managership of the M. R., and in 1924 became ch. of the London, Midland & Scottish Rly. He was knighted in 1911.

Grange (late Lat. *granea*, barn). Term now used for a country house with farm attached, and also for a better-class farm. It has been applied to a granary, a barn, a farm, occasionally to a collection of farms, and hence a village or hamlet, and especially, in the Middle Ages, to outlying farm buildings belonging to a religious house or lay lord where crops for tithe or rent were stored.

Grange OR **GRANGE OVER SANDS.** Urban dist. and watering-place of Lancashire. It stands on Morecambe Bay, 9 m. from Carnforth, and has a station on the Furness Rly. The chief building is the Victoria Hall; there are also public gardens, and the urban council owns the water supply. With a mild climate, it has a hydropathic establishment and has good bathing facilities. Pop. 2,200.

Grangemouth. Burgh and seaport of Stirlingshire. It stands on the south side of the Forth, 3 m. from Falkirk, and is served by the N.B. and Cal. Rlys. Here two streams, the Grange and the Carron, fall into the Forth. Mainly a modern town, it arose on the terminus of the

Forth and Clyde canal, and has now extensive docks. From here coal and iron are shipped, while the ore for the ironworks of the Falkirk district is landed here. Steamers go to London, Rotterdam, and other ports. There is a large shipbuilding yard, two dry-docks, and manufactures of rope, etc. The town council owns the water and gas works. Pop. 11,000.

Grange Party OR **GRANGERS.** Economic organization in the U.S.A., in full the Society of Patrons of Husbandry. It was founded in 1867, the prime mover being O. H. Kelley, a farmer from Minnesota, and its main object was to foster the agricultural interest. A feature was that it was a secret society. Its membership was limited to those engaged in agriculture; women were eligible with men. Until 1873 its influence was very marked and to it much legislation was due, the railways being a subject of much interest to the Grangers. After 1873 a period of decline set in, but after 1890 the movement revived and it is now a strong organization.

Granger, JAMES (1723-76). English writer and print collector. Born at Shaftesbury, Dorset, and educated at Christ Church, Oxford, he became vicar of Shiplake, where he died April 4, 1776. He wrote a Biographical History of England, from Egbert to the Revolution, 1769, which he lavishly illustrated with the engraved portraits he had collected. This history was added to by other hands, one copy containing 3,000 portraits.

The process of extra-illustrating a book with pictures relating to all that the book contains has been known since as grangerising. The grangeriser, having made his collection, takes his book to pieces, inserts the extra illustrations in the most appropriate places, and has the whole bound anew. Notable examples of this kind of work are the Crowle copy of Pennant's History



Grangemouth, Stirlingshire. Quays on the Forth and Clyde canal, of which this town is the terminus

Valentine

of London, in the British Museum; and Sutherland's Clarendon and Burnet, in the Bodleian.

Granicus. Ancient name of the modern Bigha Chai, a river of the Troad, Asia Minor. It flows into the Propontis, or Sea of Marmora, and is famous as the scene of the battle in which Alexander the Great defeated the Persians in 334 B.C.

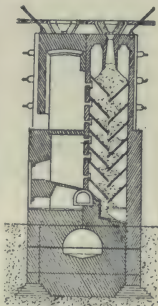
Granite (Ital. *granito*, grained, speckled). Granular crystalline rock normally composed of the minerals felspar, quartz, and mica or hornblende, with a number of other minerals in varying small percentages, as magnetite, zircon, etc. The latter minerals have different effects upon the appearance of the granite. Graphic granite, for example, has quartz and felspar so arranged that a section gives the appearance of cuneiform characters; the granite of Peterhead is red, due to admixture of iron oxides, etc. The usual colour of the rock is a shade of grey, though pink, red, greenish, and yellow are found and all variations of texture from coarse to fine grained.

Granites are found in large irregular amorphous masses, known as bosses, sometimes extending over hundreds of square miles, and were originally cooled at great depths below the earth's surface. On account of its great strength and hardness granite is largely used in all stone construction, though the difficulty of working it makes its use expensive. The granites of Cornwall, the red Peterhead granite, and granites of Aberdeen are considered the best in Great Britain, though those of Mount Sorrel in Leicestershire, and Wales are largely quarried. See *Geology*; consult also *Stones for Building and Decoration*, G. P. Merrill, 1905.

Granitite. Variety of granite in which the mica constituent is represented by biotite alone.

Granitza Furnace. Form of furnace used at New Almaden, California, for the treatment of fine mercury ores.

It consists of a vertical shaft having a series of sloping shelves one above the other, down which the ore slides, being deflected from side to side as it falls. A fire-grate is provided at one side of the shaft. See *Furnace*; *Mercury*.



Granitza Furnace
Sectional diagram:
see text

Gran Sasso d'Italia (Great Rock of Italy). Mt. mass of the Apennines. It lies between the provs. of Teramo and Aquila. The highest peak is Monte Corno (9,580 ft.), the loftiest point of the range. Other peaks are Corno Piccolo, 8,650 ft.; Pizzo d'Intermesole, 8,680 ft.; Pizzo Cefalone, 8,307 ft.; and Monte della Portella, 7,835 ft. Generally snow-capped, it commands an extensive view, including the Dalmatian Mts. Summer and autumn are the best seasons for making the ascent, either from Aquila or Teramo. It was first ascended by Orazio Delfico in 1794. There is an Italian Alpine Club hut near the summit. See *Apennines*.

Grant (Lat. *credentare*, to entrust). Literally, permission and thus a gift, the implication being that such a gift carries with it a privilege of some kind. It is thus used especially in law, where it means the conveyance of property from one person to another by deed. A deed of grant is now the proper method of conveying freehold property; but it is used in most other cases also, whether the property be real or personal. A grant-in-aid is money granted by Parliament to local authorities in aid of local services.

Grant, ALBERT (1830-99). Company promoter. Son of W. Gottheimer, he was born in Dublin.



He adopted the name of Grant, and raised capital to the extent of £24,000,000 in connexion with companies operating on the Continent, in China, S. America, and elsewhere, with ultimate loss to shareholders of about £20,000,000. He was M.P. for Kidderminster in 1865-68 and 1874-80. In 1868 he was made a baron by Victor Emmanuel. He became owner of The Echo in 1874 and built a magnificent mansion, Kensington House, which was demolished on behalf of his creditors. In 1873-74 he bought Leicester Fields and, after laying out the garden, handed the ground over for the benefit of the public, July 2, 1874. His pictures fetched over £100,000 at Christie's in 1877. His later years were taken up in defending bankruptcy proceedings. He died at Bognor, Aug. 30, 1899. See *Leicester Square*.

Grant, JAMES (1802-79). Scottish journalist. Born at Elgin, Morayshire, he helped to found, and for a time edited, The Elgin Courier,

and, after serving The Morning Chronicle, London, was editor of The Morning Advertiser, 1850-71. He was author of a history of The Newspaper Press, 3 vols., 1871-72, and wrote extensively on theological subjects from a Calvinistic standpoint. He died at Bayswater, May 23, 1879.

Grant, JAMES (1822-87). Scottish novelist. Born at Edinburgh, Aug. 1, 1822, son of Captain Grant,



James Grant

92nd Gordon Highlanders, and related through his mother to Sir Walter Scott, he served, 1840-43, as an ensign in the 62nd Foot, studied for a time in an architect's office, and

then devoted himself to literary work. Of his 56 novels, most of which deal with military life or Scottish history, the most notable is The Romance of War, 1845. It was largely based on his father's stories of the Peninsular War. He was author of Memorials of Edinburgh Castle, 1850; Old and New Edinburgh, 1880; Memoirs of Montrose, 1858; Cavaliers of Fortune, or British Heroes in Foreign Wars, 1859; Scottish Soldiers of Fortune, 1889; Histories of British Battles, 1873 and 1884; an Illustrated History of India, 1876; and The Tartans of the Clans of Scotland, 1886. He was one of the pioneers of the volunteer movement, and died in London, May 5, 1887.

Grant, JAMES AUGUSTUS (1827-92). British soldier and explorer. Born at Nairn, April 11, 1827, and educated at Marischal College, Aberdeen, he received a commission in the 8th Native Bengal Infantry, 1846. He took part in the sieges of Multan and Gujerat, 1849, and was attached to the 78th Highlanders at the relief of Lucknow, 1857, when he was wounded. In 1862-63 he accompanied J. H. Speke (q.v.) in exploring the sources of the Nile, and published A Walk Across Africa, 1864. In 1868 he accompanied the Abyssinian expedition under Napier. He left the army with the rank of lieutenant-colonel, and died at Nairn, Feb. 11, 1892. His collection of dried plants is in the herbarium at Kew Gardens.

Grant, SIR JAMES HOPE (1808-75). British soldier. Born at Kilgraston, Perthshire, July 22, 1808, a brother of Sir Francis Grant, the portrait-painter, he entered the 9th Lancers in 1826 and saw his first

active service in the Chinese War (1840-42). Proceeding to India, he fought in the first and second Sikh Wars. He played a most important part in the suppression of the Indian



Joseph Grant

Mutiny, notably in the operations before Delhi, and in the first and second reliefs of Lucknow. In 1860 he was commander in the war against China which soon ended in the capture of the Taku forts and the surrender of Peking. In 1870 Grant received the Aldershot command, when, in face of strong opposition, he initiated the autumn manoeuvres. He died in London, March 7, 1875.

Grant, ULYSSES SIMPSON (1822-85). American soldier and president of the U.S.A. Born April 27, 1822, near Clermont, Ohio, the son of a farmer of Scottish ancestry, he was educated at the military academy of West Point. He fought with distinction in the Mexican War (1845-48), but in 1854 resigned from the army and was engaged for some years in farming and in real estate dealing. His first command in the Civil War was the colonelcy of an infantry regiment of volunteers, and shortly afterwards he was made a brigadier-general. But the event which brought him into real prominence was his capture of Fort Donelson, in Tennessee, in Feb., 1862.

Less successful at Shiloh in the following April, he began as commander of the Thirteenth Army



the series of movements which culminated in July, 1863, in the surrender of Vicksburg to him, with some 30,000 men. This brilliant piece of work brought Grant the command

of the military division of the Tennessee, and the rank of major-general in the regular army, followed by promotion to the rank of lieutenant-general after the victory at Chattanooga in the autumn.

In March, 1864, Grant, now recognized by Lincoln as the one man capable of finishing the war, was made commander-in-chief and established his headquarters with the army of the Potomac, operating in

Virginia. The main strength of the Confederates was there, and Grant announced that he would fight it out on this line, though it took him all the summer. The battles of this campaign, The Wilderness, Spottsylvania, Cold Harbour, and others, were among the most terrible of the war. Grant's losses were greater than those of his opponent Lee, but Grant could always reinforce his depleted ranks, whereas Lee could not. Eventually the policy of attrition began to tell. Petersburg and Richmond, the Confederate capital, fell on April 2 and 3, 1865, and with the surrender of Lee's shrunken remnant at Appomattox Court House on April 9, the war was virtually finished.

Grant was not perhaps a military genius of the highest order, but he showed remarkable ability in the manner in which he exercised a general supervision of the war while conducting a most strenuous local campaign. Moreover, he saw clearly that, against the superior forces of the North, the eventual overthrow of the South was inevitable, and he set himself to accomplish that purpose.

In 1868 Grant became president of the U.S.A. and held office for two terms. During his presidency the Alabama claims against Britain were settled. In 1880 there was a movement to put Grant forward for a third term, but the project aroused opposition as being unconstitutional and was accordingly dropped. In 1884 the banking house in which Grant had become a partner failed, and he was reduced to poverty. In order to provide for his wife and family he began to write his Personal Memoirs, which enjoyed great popularity. He died of cancer in the throat at Mt. MacGregor, near Saratoga, July 23, 1885. See American Civil War.

Bibliography. Military History of Grant, 1861-65, A. Badeau, 1881; From Tanyard to White House, W. M. Thayer, 1885; Grant as Soldier and Statesman, E. Howland, 1868; Grant's Campaign in Virginia, 1864, J. H. Anderson, 1908; Grant's Campaign in 1864 and 1865, C. F. Atkinson, 1908.

Grantham. Mun. borough and market town of Lincolnshire. It stands on the Witham, 25 m. S.S.E.



Grantham arms

of Lincoln and 10.5 m. from London, and is an important junction on the G.N. Rly.; it is also served by a canal. The chief building is the church of S. Wulfram; mainly 13th century work, it has a



Grantham, Lincolnshire. Parish church of S. Wulfram, showing the 14th century spire, 280 ft. high

Frith

massive tower with spire, and is noted for its window tracery, crypt, and chained library. Sir Isaac Newton was educated at the grammar school here; it is of the time of Edward VI. There are a modern guildhall, an exchange, and several churches. The ancient market cross was re-erected in the large market place in 1910.

The Angel Inn is a building that once belonged to the Templars, while the George is mentioned in Nicholas Nickleby. The chief industries are the manufacture of agricultural implements and engines, malting, and basket-making, wickerwork, etc. Grantham existed in the time of Domesday. Various charters were given to it, and it was represented in Parliament until 1918. It obtained a mayor and corporation in 1463, and is now governed by a corporation reformed under the Act of 1835. Several fairs are still held. Market day, Sat. Pop. (1921) 18,902.

Grant Land. Ice-bound tract within the Arctic Circle. It is the northernmost part of Ellesmere Island, in British North America, W. of Lincoln Sea and E. of Nansen Sound. Discovered by Hayes, Hall, and Nares in 1875, it lies between lat. 81° and 83° N.

Grantley, FLETCHER NORTON, 1st BARON (1716-89). English lawyer. The son of a Yorkshireman, he was born at Grantley, June 23, 1716, and was called to the bar in 1739. He entered the

House of Commons as member for Appleby in 1756, and remained therein, sitting for various constituencies, until 1782. In 1762 he was made solicitor-general and in 1763 attorney-general. He was elected speaker of the House of Commons in 1770, but lost the position in 1780, largely owing to the way he had addressed the king about money matters in 1777. He was raised to the peerage in 1782. An able but unscrupulous lawyer, he figured in the public prints as Sir Bull-face Doublefee. He died Jan. 1, 1789, when his eldest son William (1742-1822) became the 2nd baron; the title is still held by the descendants of the 1st baron.

Grantown. Seaport of Edinburghshire, Scotland. It stands on the Firth of Forth and within the city of Edinburgh. It has a good harbour, with two breakwaters and facilities for coaling, and is the headquarters of several steamship lines and a landing place for the North Sea trawlers. Coal, cotton, etc., are exported, and timber, grain, tobacco, etc., imported. *See* Edinburgh.

Grantown. Police burgh and market town of Elginshire, Scotland. It stands on the Spey, 23 m. S. of Forres, on the Highland and G.N. of Scotland Rlys. The capital of Strathspey, Grantown is finely situated amid magnificent forests of pine and birch, and is frequented as a health resort. Distilling is carried on and there is a trade in cattle. The town was founded in 1776 by Sir James Grant, hence its name, and near it is Castle Grant, seat of the earls of Seafield. Pop. 1,450.



Granville, France. The lower and upper towns, from the south

Granulite (Lat. *granulum*, little grain). Rock mainly composed of felspar, quartz, mica, and granite. The name is used for several varieties of rock by geologists. It is common in Scotland and parts of Europe.

Granville or **GRANVELLA**, ANTOINE PERRENOT DE (1517-86). Spanish prelate and diplomatist.

Born Aug. 20, 1517, at Besançon, his father was a lawyer who became chancellor to the emperor Charles V. Educated at the universities of Padua and Louvain, Antoine became a priest, and in 1540 was made bishop of Arras. His father's influence, however, and his own aptitude led him into political life, and he, too, was soon employed by Charles V on diplomatic business. He attended some of the sittings of the council of Trent in the emperor's interest, and was responsible for the treaties between Charles and his German foes in 1547 and 1552. He helped to arrange the marriage between Mary and Philip II, and in 1559 settled in the Netherlands as chief adviser to the regent, Margaret of Parma.

From 1570-75 Granville was viceroy of Naples for Philip II, after which he held a controlling position in state circles at Madrid. Granville was made archbishop of Malines in 1560, archbishop of Besançon in 1584, and a cardinal in 1561. He died at Madrid, Sept. 21, 1586. Granville's letters and papers, owing to the prominent part he took in European politics, are an important source for historians.

Granville. Town of New South Wales, Australia, in Cumberland co. It is situated a few miles E. of Parramatta on the Parramatta-Sydney Rly., and is a manufacturing centre within Greater Sydney. Pop. 6,938.

Granville. Town and watering-place of France, in the dept. of Manche. Built on a promontory, where the river Bosq enters the English Channel, it is divided into the lower town and the upper town, the latter being surrounded by fortifications and containing the citadel. The Gothic church of Notre Dame was restored in the 15th-16th centuries. The town has a good harbour and a shipping trade. It was fortified by the English when they held France, but was taken from them in 1450. They possessed it again later, but, having fortified it in 1640, finally lost it in 1641. Pop. 11,350.

Granville, EARL. British title borne since 1833 by the family of Leveson-Gower. The first earl was Lord Granville Leveson-Gower (1773-1846), a younger son

of the 1st marquess of Stafford. He was secretary at war and ambassador in turn to Russia and France. His son, the 2nd earl, was leading Liberal politician in the time of Gladstone, and his grandson, Granville George, the 3rd earl (b. 1872), was in the diplomatic service, being made minister at Athens in 1917. *c*

Granville, GRANVILLE GEORGE LEVESON-GOWER, 2ND EARL (1815-91). British statesman. The eldest son of the 1st earl, he was born May 11, 1815, and was educated at Eton and Christ Church, Oxford. Related to the great Whig families, he entered Parliament as M.P. for Morpeth in 1836, and was an under-secretary under Melbourne. In 1846 he succeeded to his father's earldom, and a succession of political offices followed. In 1846 he was made master of the buckhounds; in 1848 vice-president of the board of trade; in 1851 foreign minister. In 1852 he was chosen president of the council; in 1854 chancellor of the duchy of Lancaster; and in 1855 was again president. He resigned with his colleagues in 1858.

In 1855 Granville became leader of the Liberals in the House of Lords. In 1859 he became president of the council, and from 1868-70 he was colonial secretary, this being under Gladstone, with whom he was henceforward closely associated. He was foreign secretary 1870-74, and again 1880-85, but he is usually regarded as weak in that position. He followed Gladstone on Home Rule, and in 1886 was for a short time colonial secretary. A cultured man of gracious personality, and alive to the need for change and improvement, Granville was chancellor of the university of London from 1856-91. He died in London, March 31, 1891. *See* Life, Lord Fitzmaurice, 1905.

Grão Mogol. Town of Brazil, in the state of Minas Geraes. It stands in a mining district on a tributary of the Jequitinhonha, 55 m. due N. of Minas Novas.

Grape. Fruit of the vine (*Vitis vinifera*), a shrub of the natural order Ampelideae. The vine, which is a native of the Mediterranean region, was apparently introduced into Britain at the time of the Christian era. In the S. and W. of



Granville



Grape. Black Hamburg grapes, a fine dessert variety, growing under glass

England grapes will ripen in the open air, on sunny borders with rich loamy soil dug to a depth of 3 ft. The vines should be cut back every year in winter, and given copious draughts of liquid manure and dressings from the stable. Where it is necessary to grow grapes under the shelter of glass, the vine should be planted in rich loam mixed with old lime rubbish, and the canes planted early in the year, say, at the end of January, putting the vines 6 ft. apart.

Grapes may be had at any time in the year by starting the vines six months ahead of the date required and keeping them in a temperature which rises automatically from 45° to 80°, according to the season of the year and the results expected. The vines should be watered liberally until they flower, using water of a similar temperature to that of the house. As soon as the vines have ceased to flower and the fruit has formed, the supply of water should be diminished, and the bunches of newly formed grapes should be thinned to ensure berries of good size and full flavour and colour being produced. A good



Grape Hyacinth. Leaves and flowers of the bulbous herb

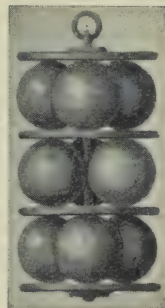
average bunch of grapes should weigh from $\frac{3}{4}$ lb. to 1 lb., and these bunches should be borne at intervals of about 1 ft. upon the rod or vine. It is a mistake to thin grapes insufficiently with the idea of getting a larger crop, as by so doing the resulting fruit is of inferior size and quality, and the vine is impoverished. See Vine; Wine.

Grape Fruit (*Citrus decumana*). Tree belonging to the same genus as the orange, alternatively known as shaddock (*q.v.*).

Grape Hyacinth (*Muscari racemosum*). Bulbous herb of the natural order Liliaceae. A native of Europe and S. Africa, it has long, slender, half-rounded leaves, and a short flower stem, bearing many round dark-blue flowers.

Grape Pear (*Amelanchier canadensis*). Small tree of the natural order Rosaceae. It is a native of N. America. It has oblong-elliptic, toothed leaves, and large white flowers in drooping sprays. The fruit is globular, of crimson or purplish colour, sweet and agreeable.

Grape-shot (*Fr. grappe*, bunch of grapes). Obsolete projectile at one time much used for smooth-



Grape-shot, an obsolete projectile

bore guns. It consisted of a large number of cast-iron bullets packed in layers between thin iron plates, and then arranged in tiers (generally three), the whole being held together by an iron bolt passing through the centre of the plates, thus resembling a bunch of grapes. When fired the shot broke up and distributed the bullets in a shower in a somewhat similar manner to case-shot, but at a greater distance from the muzzle of the gun. It has been entirely replaced by shrapnel (*q.v.*). See Ammunition.

Grape Sugar. Solid form of glucose also known as dextrose (*q.v.*).

Graph (*Gr. graphein*, to write). Diagrammatic representation of statements, formulae, etc. Graphical methods are increasingly employed in the solution of problems, and the presenta-

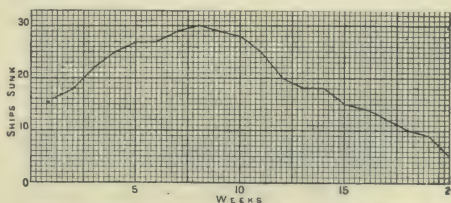


Grape Pear. Leaves, flowers, and fruit of the North American tree

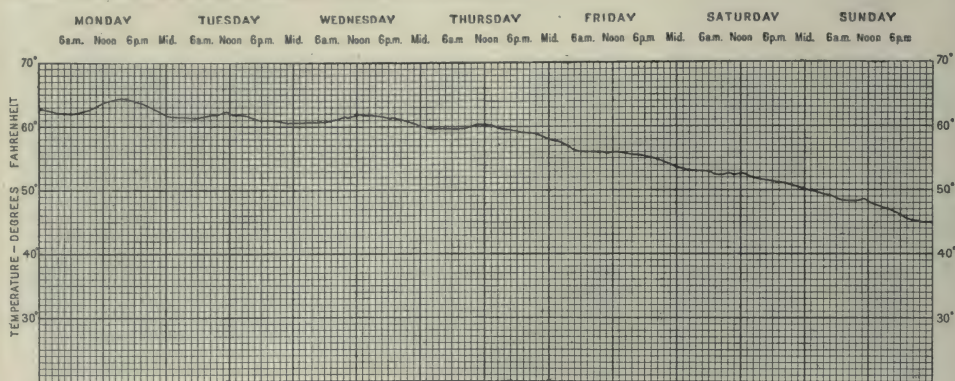
tion of the results of analysis, not only in science, but in every-day affairs. Simple examples of such diagrams are charts showing variation of temperature, the rise and fall of exports and imports over a given period, etc. These charts are usually prepared on squared paper, i.e. paper divided into squares by equidistant horizontal and vertical lines.

In general, two lines are chosen at right angles, and the position of any point on the curve is defined with reference to these lines. As an example, suppose it is required to show over a given period the number of ships sunk by submarines week by week. Along one of the axes are marked at equal intervals the number of weeks, 5, 10, 15, etc., and along the axis at right angles the number of ships sunk during each of those weeks. In the third week, say, 22 ships were sunk.

Then from the points 3 of the week's axis, and 22 of the ships' axis, lines are drawn meeting, and where they meet gives one point on the curve, and similarly other points are obtained, and so a complete diagrammatic representation of the sinking of ships by submarines, enabling those who have drawn the curve to see at once how the rate of sinking is rising or falling, without remembering a mass of figures. Such graphical methods are now widely used in commerce, e.g., in curves, showing the output in various industries, fluctuations of wages, rates of exchange, etc.



Graph, indicating number of ships sunk in a period of twenty weeks. See text



Graph, showing variation of temperature from hour to hour during one week. The temperature is seen to be steadily falling from 63° F. to 45° F. See also text

Another example of the use of graphical methods is shown in the chart giving the temperature during one week. Horizontally, at equal distances, are marked the days of the week, while vertically appear temperatures in degrees Fahrenheit. The temperature at noon on Monday is 64° F., and a point is made on the chart where the 64 line and the Monday noon line meet. Similar points are made for the temperatures for every six hours during the week, and these points are all joined, either by straight lines or curved lines, showing the gradual increase or fall of temperature. This chart tells its own story at once, that the temperature on the whole during the week has been steadily falling. The line joining the various points on such a graph, whether it is straight or not, is called the curve through the points.

In mathematics, graphical methods are very largely used for the solution of algebraical and other problems. In algebra one function y is often expressed in terms of another function x , so that as x varies in value, so does y . Now if along the two axes of reference are measured distances x and y , which correspond to one another, a curve representing the equation $y=F(x)$ may be drawn. By this method an approximate solution may be obtained to any equation, however complicated, where it is impossible to obtain a solution by any other method. See Barograph; Coordinates; Geometry.

Graphic. THE. London weekly illustrated newspaper. It was started Dec. 4, 1869, by W. L. Thomas, a feature being acceptance of drawings whatever the method of the artists contributing them, the illustrations previously in vogue being the work only of draughtsmen on wood.

On the art side The Graphic has numbered on its staff Henry Woods, Luke Fildes, Frank Holl, H. Herkomer, E. J. Gregory, James D. Linton, E. J. Poynter, and Phil May; while its literary contributors have included Edmund Yates, G. A. Sala, Anthony Trollope, Charles Reade, Victor Hugo, Wilkie Collins, George Meredith, Thomas Hardy, William Black, Bret Harte, Walter Besant, J. M. Barrie, and Rudyard Kipling. Sydney P. Hall and Frederic Villiers did splendid work for it as war artists. J. M. Bulloch was appointed editor in 1909. The control of the paper, together with that of The Daily Graphic and Bystander, passed from H. R. Baines & Co., Ltd., in Nov., 1919, to W. E. and J. G. Berry.

Graphic Statics. Method used for obtaining the relations between forces, external and internal, acting on a body or framework in engineering. Forces are represented in magnitude and direction by straight lines, and by compounding them together according to the law of the polygon of forces, the forces in any part of a framework may quickly be obtained. The representation of these forces is called the stress diagram, and from it can be obtained by direct measurement the force in any particular member of a structure, as a bridge. See Graphical Statics, L. Cremona, Eng. trans. L. H. Beare, 1913; Theory of Structures, A. Morley, 1918.

Graphite OR BLACK LEAD. Mineral form of carbon, soft, grey or black in colour, with greasy touch. Scheele, in 1779, showed the true nature of graphite, which when pure is entirely converted into carbonic acid gas just as the diamond. It occurs in nature in various parts of the world. The deposits at Borrowdale in Cumberland were for many years the chief

source of the graphite used for black-lead pencils. Large quantities are found in Ceylon and the United States of America.

For making pencils, graphite was originally employed in the form of slips cut from blocks of graphite, but to use up the graphite powder obtained as a by-product other methods were adopted. Finely sifted graphite is blended with other substances according to the hardness of the pencil required.

Plumbago crucibles are made largely from Ceylon graphite mixed with Stourbridge clay. The mass is worked up with water, and then left to mature for some weeks, after which the crucibles are shaped by the method familiar to potters, and afterwards dried and fired. The advantage of plumbago crucibles in metallurgical operations is that they stand changes of temperature without cracking, and do not absorb any of the metal which is melted in them. The variety of graphite known as gas carbon is deposited in the upper parts of the retorts used in the manufacture of coal gas and in blast-furnaces. Very hard, it is employed for making carbons for the arc electric light and as electrodes in batteries.

The use of graphite as a stove-polish is familiar. Ceylon graphite is mixed with lamp-black into a paste by means of vinegar and turpentine; the lamp-black neutralises the silvery lustre which is produced by Ceylon black-lead alone. See Carbon.

Graphotype (Gr. *graphein*, to write; *typos*, impression). Process of making drawings in the form of a relief from which stereotypes may be taken. The drawing was done on the surface of compressed chalk with a special ink, the chalk afterwards being brushed away, leaving the lines of the design in relief. The process is now obsolete.

Grapnel. Small anchor with four or five or more flukes. It is not used where any great strength is required for holding purposes, but for anchoring small boats, enabling balloons to get a grip of the ground, etc. See Anchor.

Grappa. Mt. of Italy, the highest in a range between the valleys of the Brenta and the Piave. The Grappa region was prominent in the Great War, and fighting took place here by which the Italians stayed the Austro-German invasion after the Caporetto disaster, Oct., 1917. This front was again involved in fighting in June, 1918, during the Austrians' last offensive. The enemy were cleared from this sector towards the end of Oct., 1918. See Asiago Plateau, Battles of; Monte Grappa, Battles of.

Grapple-plant (*Harpagophytum procumbens*). Prostrate perennial herb of the natural order Pe-



Grapple-plant. Leaves, flower, and fruit of the S. African herb

dalineae. A native of S. Africa, the leaves are hand-shaped, the purple flowers funnel-shaped. The large fruits are armed with strong, sharp hooks which cling to the skins of animals, and so get transported from place to place, the numerous angular seeds being shaken out by the movements of their carriers. When they come in contact with the lips of browsing animals they cause intolerable pain. Dr. Livingstone has told how an ox will stand and roar with the pain and sense of helplessness inflicted by these fruits attached to its mouth, which also prevent its feeding.

Graptolitoidea (Gr. *grapbos*, lettered; *lithos*, stone; *eidos*, form, likeness). Extinct class of low organisms, remains of which are found in early sedimentary rocks. They are often to be seen on slates, forming a fossilised film, and looking rather like a flattened branch of seaweed or seafirs. These organisms were tiny marine animals belonging to the order Hydrozoa.

Gras, Félix (1844-1901). Provençal novelist and poet. He was born May 3, 1844, at Malemort,

Vaucluse. His first work, *Li Carboundié*, an epic of the mountains, won him an immediate posi-



Félix Gras, French author

tion among the younger *félibres*, an association for the presentation of Provençal language and literature started twenty years earlier by Roumanille and Mistral. This was followed, in 1882, by *Tolozan*, an epic dealing with Simon de Montfort and the persecution of the Albigenes. Then came *Lou Roumanero Provençal*, a collection of traditions of the country in ballad form, 1887; and *Li Papalino*, tales in prose dealing with olden days of the popes at Avignon, 1891. Later he wrote three impressive novels of the French Revolution, all of which have been translated into English by C. A. Janvier, *The Reds of the Midi*, 1896; *The Terror*, 1898; and *The White Terror*, 1900.

Graslitz or **KRASLICE**. Town of Czecho-Slovakia, in Bohemia. It stands near the German frontier, 20 m. N.N.E. of Eger. An important manufacturing centre, it is noted for its musical instruments. Other leading industries are the manufacture of cotton, lace, embroidery, and toys. Pop. 39,216.

Grasmere. Lake and village of Westmorland, England. The lake is one mile long and about $\frac{1}{2}$ mile wide. It is beautifully situated in a valley in the centre of the Lake District, with the mountains all around. The village, which stands where the Rothay falls into the lake, is 4 m. from Ambleside and 12 from Keswick. It is noted for its associations with Wordsworth, whose early residence, Dove Cottage, is here. In it De Quincey also lived. In the churchyard are the tombs of Wordsworth and Hartley Coleridge.

An annual festival, called the rushbearing, takes place here on the Saturday after S. Oswald's Day, Aug. 5. The place has also an athletic meeting every August. S. Oswald's Church is partly a 13th century building. Grasmere is a good centre for visitors to the Lakes. Coaches and motor-vehicles go

from here to Keswick, Coniston, and elsewhere, and there is boating on the lake. See Lake District, The.

Grass. Term strictly applied to species of the natural order Gramineae, but in farming language also used of clovers and other kinds of herbage growing together in a field. A distinction is drawn between temporary grass, or ley, intended to be ploughed up after a certain interval, and permanent grass, which occupies the land continuously, either as pasture, which is entirely devoted to grazing, or as meadow, that may yield a hay crop every year or at regular intervals. When first laying down land to grass, careful cleaning and the preparation of a fine seed bed are necessary.

The mixture of seeds employed varies according to the object in view. For temporary leys those species of grass and clover are chosen which are short-lived but of rapid growth, while perennial types make up the mixtures employed when permanent grass is to be established. For the latter the exact nature of the mixture will depend on the local soil and climate. Only seed of the highest quality should be used.

The management of established pastures requires considerable skill. At the end of winter and beginning of spring chain-harrowing and rolling are beneficial. By the former process dung is spread out, molehills levelled, and moss removed, while rolling consolidates the soil round the roots and encourages a thick growth of herbage. Cattle must not be turned on too early, certainly not until late in April; sheep crop grass very closely, so that they can get a good living after the other kinds of stock have had their turn. Pastures devoted to fattening stock require little artificial manuring, but where lime is deficient this may be supplied, either in the form of quicklime or of ground lime. Poor pastures may require dressings of



Grasmere, Westmorland. The lake and village seen from the south

potash or phosphates, and in the latter case remarkable results have been obtained from basic slag.

Meadows, after being used for grazing, require chain harrowing and rolling, and stones or the like should be removed when a hay crop is in anticipation. Large dressings of manure are necessary, more especially if a hay crop is taken every year. Every three or four years farmyard manure, up to 10 tons per acre, can be applied with advantage, supplemented by a complete mixture of artificials in years when the meadow has not been dunged.

The world's great natural grasslands are known by various names, prairies in Canada, steppes in Russia, pampas in S. America, veld in S. Africa, downs in Aus-

Grass Cloth. Term commonly applied to fine fabrics woven from certain Oriental plants which are not grasses, especially to that made from China grass (*Boehmeria nivea*), which is a nettle-like plant. The inner fibres of Manilla hemp, a plant of the banana family, produce good grass cloth, much used in Europe for articles of dress. The cloth made from true grasses, e.g. esparto, is coarse.

Grasse. Town of France. In the Alpes-Maritimes dept., it is 19 m. W.S.W. of Nice. On a mt. slope, 700-1,380 ft. above sea level, sheltered from the cold winds of the N. and open to the S., it is a favourite winter resort and a centre for the manufacture of perfumes and essences, about 60,000 acres being devoted to the cultivation of roses and orange flowers.

The parish church, an old cathedral, dates from the 12th-13th centuries; the hôtel de ville, with a 12th century tower, the hospital, and the casino are notable features, and there is a public park. Queen Victoria stayed here in 1891. J. H. Fragonard, the painter, to whom there is a statue, was a native. Pop. 19,700.

Grasses. Name loosely applied to many plants of diverse nature, but more correctly indicating those of the natural order Gramineae (q.v.). Although both in genera and species they are outnumbered by the orchids, in individuals grasses predominate over all other green vegetation. When the farmer speaks of grass he is referring to all the fodder plants that constitute the pasture and all the meadow plants that will convert into hay. The crops of his cornfields, whether wheat, barley, or oats, he does not refer to as grass, though they, as well as the sugarcane and bamboos of the tropics, are equally grasses. These grain-bearing grasses, including maize and rice, constitute the staple food of the human race, while the fodder grasses supply indirectly the greater part of animal diet of man. Their great importance is due to the richness of their seeds in the matter of starch and the high percentage of protein. Certain grasses, such as esparto, yield fibres that are of value in the making of paper and cordage. Grasses are found in nearly every part of

the world where there is a little soil, from the tropics to the arctic regions, and from high-water mark up to the limits of vegetation on the mountains.

Grasshopper. Orthopterous (straight-winged) insects of the Locustidae and Acridiidae families.



Grass-hopper. *Locusta viridissima*. Above. *Meconema thalassinum*

Remarkable for their long hind legs and jumping powers, they are common in fields during summer. They vary in colour from green to brown, and the species vary much in size. The Locustidae are usually green in colour, with long antennae and an ovipositor in the female. The Acridiidae have short antennae and no ovipositor.

Locusts do not belong to the Locustidae but to the Acridiidae. The familiar chirp is produced in the former family by rubbing the wings together, and in the latter by drawing the edge of the wing along the inner side of the femur. Most of the species feed upon plants, but a few eat caterpillars and small insects. See Locust.

Grassmann's Law. In philology, name given to the explanation of certain exceptions to the law of consonantal interchange known as Grimm's Law. It deals with the aspirated mutes (gh, kh, dh, th, bh, ph) and lays down the principle that, when an original Indo-European root began and ended with an aspirate, only one was allowed to stand in Sanskrit and Greek, e.g. *Skt. bhavami*, Gr. *phuo*, I become, but *babhuva*, *pephuka*, I became. See Philology; Phonetics.

Grassmarket. Thoroughfare of Edinburgh, Scotland, between West Port and the Cowgate. A weekly market has been held here since 1477. A stone cross marks the site of the ancient gallows where many of the Covenanters were executed. During the riots



Grasse. The South of France winter resort, from the east. On the hilltop are the Hôtel de Ville and the Cathedral

tralia. On the desert edge the grasslands degenerate into scrublands; on the forest edge they become parklands or savannahs.

In Western Europe and in New Zealand the natural vegetation should be forest, but the trees have been cleared and the land devoted to arable and pasture. In New Zealand, cleared land is sown, usually with English grass seed, and sheep and cattle are fed upon the resulting crop. Upon mt. ranges in medium latitudes the higher levels where trees do not grow usually become meadows during the summer months.

These summer pastures are the "Alps," and are used in Switzerland and similar countries for the summer feed of flocks and herds. Some natural grasslands, such as the pampas, are sown with alfalfa or lucerne, an excellent food for cattle, which thrives especially in a slightly alkaline soil and in a dry climate. Other grasslands are gradually being turned to arable; the great wheatlands of N. America are gradually obliterating the original prairie. See Farm; Pasture; Water Meadow.



1. *Holcus mollis*. 2. *Alopecurus pratensis*. 3. *A. ovatus*.
 4. *Ammophila arundinacea*. 5. *Phleum pratense*. 6. *Nardus stricta*. 7. *Calamagrostis stricta*. 8. *Anthoxanthum mollis*. 17. *Bromus diandrus*.

odoratum. 9. *Aira caespitosa*. 10. *Triodia decumbens*.
 11. *Cynosurus cristatus*. 12. *C. echinatus*. 13. *Festuca elatior*. 14. *Briza media*. 15. *Poa pratensis*. 16. *Bromus*
 18. *Lolium multiflorum*

GRASSES FOUND IN MEADOW AND MOORLAND OF GREAT BRITAIN

Specially drawn for Harmsworth's Universal Encyclopedia by Estella Harbord

of 1736, Captain Porteous was dragged here from the Tolbooth and hanged from a dyer's pole. See Edinburgh.

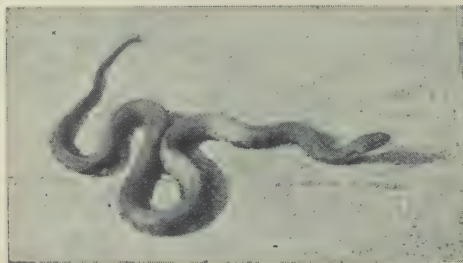
Grass of Parnassus (*Parnassia palustris*). Perennial herb of the natural order Saxifragaceae.



Grass of Parnassus, leaves and flowers

It is a native of Europe, N. Africa, N. and W. Asia, and N. America. It is a bog plant with long-stalked heart-shaped leaves, and large solitary white flowers on tall stems. The petals are thick and veined. The large ovary bears four stigmas. Five of the ten stamens have been transformed into scales bearing nectar glands, and fringed with hairs ending in yellow knobs.

Grass Snake (*Tropidonotus natrix*). One of the commonest non-poisonous snakes of Europe,



Grass Snake. Specimen of the harmless snake common in England

part of Asia, N. Africa, and England, being unknown in Scotland and Ireland. Greenish-grey to brown above, with black bands, giving it the alternative name of ringed snake, it is black and white underneath. It has two white or yellowish-white spots behind its head which distinguish it some distance away.

Growing to a length of three to four feet, the grass snake feeds chiefly on frogs, toads, and fish, and is usually found in damp places. The eggs, varying from 15 to 30, the size of a dove's egg, are laid in rich damp mould, in manure heaps and similar places. See Snake; Water Snake; consult also Cambridge Natural History, vol. vii, London, 1901.

Grass Tree (*Xanthorrhoea*). Genus of perennials of the natural order Juncaceae, natives of Australia.

They are also known as black-boy and grass gum-tree. They have

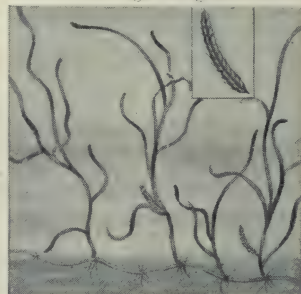


Grass Tree. The Australian tree with long flower-stems, a head of which is shown inset

short, thick trunks like those of palms, rough with the bases of former leaves, consolidated by red or yellow gum produced by the plant. The long, wiry leaves are like those of the rushes, and form a great tuft. The central flower-stem may be 15 ft. to 20 ft. long, its upper end a dense spike of small flowers like that of the reed-mace (*Typha*). *X. arborea*, the Botany Bay gum, and *X. hastilis*, when denuded of leaves, have frequently been mistaken for men (black-boys). Cattle eat the leaves, and the natives the middle of the top of the stem. The fragrant resin exuded is known to commerce as Botany Bay resin and black-boy gum.

Grass-wrack (*Zostera marina*).

Perennial marine plant of the natural order Naiadaceae. It is a native of most temperate coasts, where it grows submerged about low-water. Its slender, grass-like, bright green leaves are from 1 ft. to 3 ft. long. The green flowers



Grass-wrack. Leaves and roots of the marine plant. Inset, a flower-head

are devoid of sepals or petals, consisting only of an ovary and one or two anthers. The dried leaves are used for packing, and for stuffing upholstery, under the name of Ulvamarina.

Grate (Lat. *cratis*, hurdle). Framework comprising metal bars with air spaces between them, for retaining fuel for heating rooms, etc. The term is also used for the floor of a firebox or furnace. It has spaced bars for supporting fuel, and through them air is supplied to support combustion. Steam generators are commonly fitted with moving grates, which propel the fuel along firebars, or carry it into a furnace, to ensure complete combustion. See Furnace; Generator.

Gratian (A.D. 359-383). Roman emperor. In 375 he succeeded his father, Valentinian I, with whom he had already been associated in the government of the western empire since 367, but a section of the army insisted on his four-year-old half-brother, Valentinian II, sharing the throne. Gratian was an unwelcome youth, quite unfitted to deal with the barbarian peril. Pressed from the east by the Huns, the Goths crossed the north-eastern frontier, and in 378 won the battle of Adrianople (*q.v.*).

Valens, the emperor of the east, having fallen in the battle, Gratian invited Theodosius I to succeed him. Both rulers were under the domination of S. Ambrose, which led to the prohibition, enforced with great severity, of pagan and heretical worship throughout the empire. In 383 Maximus was proclaimed emperor by the troops in Britain, and Gratian was murdered by his own soldiery.

Gratian or **GRATIANUS**, FRANCISCUS. Medieval jurist. Born in Italy about 1100, he entered a Benedictine monastery, and as a monk spent his life. He is known solely for his legal work, the Decretum Gratiani, regarded as the foundation of canon law. He died about 1150, and, according to some accounts, was then bishop of Chiusi. See Canon Law.

Grattan, HENRY (1746-1820). Irish orator and statesman. Born in Dublin, July 3, 1746, he was educated privately and at Trinity College, Dublin.

After graduating, he was admitted a student of the Middle Temple, London, but spent most of his time listening



Grattan
After F. Wheatley, R.A.

to speeches in the Houses of Parliament and practising oratory. In 1772 he was called to the Irish bar, and in 1775 was nominated to represent Charlemont in the Irish Parliament by the owner of the borough, Lord Charlemont.

Grattan soon became the leader of the popular or patriot party. Supported by the Irish volunteers, he procured, in 1782, the passing of legislation which made the Irish Parliament independent. A further rupture between Grattan and Flood (*q.v.*) then occurred, the former believing that England had given sufficient evidence of her recognition of Irish legislative independence, and that there was no longer a need for the retention of the Volunteers, the latter clamouring for a fuller and more complete renunciation of English authority.

Grattan won, but his success, coupled with his failure to procure Catholic emancipation, saw the beginning of the decline of his popularity. He continued, however, with unabated vigour, to speak for the popular cause, attacking the pension list, the sale of peerages, and the purchase of seats in the House of Commons, pleading for the amelioration of the lot of the peasants, and for commercial equality between England and Ireland, and opposing vehemently the constant suggestions of a Union. In 1794 he supported the Government on the question of the war with France, but in 1797 protested strongly against General Lake's proclamation of martial law for Ulster.

Though so ardently devoted to the side of liberty, Grattan showed no sympathy with the movement of the United Irishmen, and in 1798, when their rebellion broke out, he went over to England and remained there until the rising was at an end. From 1806 until his death he represented Malton and Dublin in the British Parliament, his chief interests being to secure emancipation for Roman Catholics. He died in London, June 4, 1820, and was buried in Westminster Abbey. Grattan was a man of fine character, disinterested and patriotic, but his reputation rests chiefly upon his oratory, to which the highest tributes were paid by contemporaries. *See* Life, by his son, Henry, 1839-46; *Leaders of Public Opinion in Ireland*, W. E. H. Lecky, 1903.

Gratuity (late Lat. *gratuitas*, a free gift). Sum of money granted by the Government to British soldiers for services rendered on active service. It may be also granted as

compensation for wounds received, in addition to any pension which may subsequently be granted in respect of the wound, and in lieu of a pension in respect of any disability contracted on active service. The first type of gratuity is popularly designated "blood money." Gratuities for services rendered and wounds received vary according to the rank of the recipient.

A gratuity in lieu of pension in respect of disability is granted at the discretion of the ministry of pensions when it is considered that it more adequately meets the case, usually when the disability is assessed at less than 20 p.c., but a pensioner who prefers a lump sum may apply to be granted a gratuity in lieu of his existing pension. The word is also used in a more general sense for any payment that is not a legal obligation, bonuses and the like. *See* Bonus.

Grau, MIGUEL (1834-79). Peruvian admiral. A naval officer and a member of the Peruvian Congress, Grau was director of the naval academy just before the war with Chile began in 1879. Thereupon he took command of a fleet, and with his battleship, the *Huascar*, fought two Chilean ships off Point Angamos, Oct. 8, 1879. In this encounter Grau was killed by the explosion of a shell.

Graudenz or GRUDZIAZ. Town of Poland. Formerly a strongly fortified German town in W.



Graudenz, Poland. The old citadel on the Schlossberg, overlooking the Vistula

Prussia, it lies on the right bank of the Vistula, 45 m. N. of Thorn, and is commanded by a citadel built by Frederick the Great. The principal manufactures include machinery, flour, and tobacco. Graudenz fell to Poland in 1466, and to Prussia in 1772. During the early stages of the Great War it was threatened by the Russians in their advance on the Vistula, but was saved by troops hastily sent across Germany from the W. front. Pop. 40,325.

Graun, KARL HEINRICH (1701-59). German composer. Born at Wahrenbrück, in Prussian Saxony, May 7, 1701, he began his career in opera at Dresden. About 1735 he made the acquaintance of Frederick the Great, then crown prince, and was attached to his court until his death in Berlin, Aug. 9, 1759. For his patron he composed a large number of operas and cantatas and a *Te Deum* to celebrate the battle of Prague. He is best known by his cantata, *The Death of Jesus*, which is regularly performed throughout Germany during Passion Week.

Grauwacke. Alternative spelling of the name of the coarse sandstone *Greywacke* (*q.v.*).

Grave. Name for a place of burial. It comes from an Anglo-Saxon word, and from it have come the compounds gravestone, graveyard, gravedigger, etc. *See* Archaeology; Burial Customs; Burial Laws; War Graves.

Grave. In music, slow tempo, massive in character. Handel uses the term at the opening of *The Messiah*, and for the short solid double choruses in Israel in Egypt where great solemnity of delivery is required. *See* Musical Terms.

Gravel. Accumulation of worn rock fragments, formed by the action of the sea, by rivers, or by glaciers. The constituents of gravel, which may be formed from nearly every type of rock, vary in size from a walnut to a pea.

Large fragments are known as shingle, smaller as sand. By infiltration of silica, lime, or iron oxides the gravel fragments may become cemented together and are known as conglomerate (*q.v.*). The chief use of gravel is for the construction of roads and paths, those which are rich in oxide of iron being preferred for their

warm colour. Shell gravel, as its name implies, consists chiefly of shell fragments, and is extensively used for pathways. Artificial gravels are used in road-making on account of the scarcity of good binding natural gravel, and are made by crushing granite, quartz, slag, etc., to the required size. *See* Roads.

Gravelines. Town and seaport of France, in the dept. of Nord. It stands on the Aa, about 1 m. from its mouth, and 15 m. from

Dunkirk. The port has a harbour on the river, but the accumulation of sand therein is a drawback to it. It is a fishing centre, many of the fisherfolk living in Les Huttes, a part of the town almost reserved for them, and has a trade in timber, coal, etc. There are several other industries, including sugar refining, while fish and food preserving are carried on. Gravelines retains its old walls. About 1250 a count of Flanders canalised the river Aa, and here the town grew up.

Gravelines, BATTLE OF. Fought July 13, 1558, between the French on the one side and the Spaniards and English on the other. Philip II of Spain persuaded his wife Mary to join him in making war on France in 1557. On July 13, 1558, two small armies met outside Gravelines, the Spanish having English help in the shape of a fleet, under Lord Clinton, cruising along the coast. The French were charged by the Flemish cavalry under the count of Egmont, while the guns of the ships assisted in their discomfiture. The result was their defeat and the consequent treaty of Cateau Cambresis.

Gravelotte. Village of Lorraine, now part of France. It is about 6 m. due W. of Metz, and is solely important because of the battle fought here in Aug., 1870, during the Franco-Prussian War. Near the village is a large cemetery, while in 1905 the Germans erected here a colonnade in which are busts of their leaders in the war and memorials of the fallen. See Metz, Campaign of.

Gravelotte, BATTLE OF. Fought Aug. 18, 1870, in the Franco-Prussian War. There were actually engaged 100,000 French, under Bazaine, and 150,000 Germans of the first and second armies directed by Von Moltke. The fight resulted in Bazaine being driven back eastward into Metz, when he desired to move west on Verdun. It was a strategical victory for the Germans, who, by their superior numbers, were able to turn the French right flank, but they lost over 20,000 killed and wounded, while the French admitted a loss of only 13,000. The battle was part of the great campaign around Metz (*q.v.*).

Gravenstafel. Hill of Belgium, in the prov. of W. Flanders, $\frac{1}{2}$ m. N.W. of Broodseinde. It was prominent in the fighting in the Ypres salient in the Great War. During the second battle of Ypres, April, 1915, Canadian and Northumbrian troops made an heroic stand at Gravenstafel. It was captured by the New Zealand division, Oct. 4, 1917, in the third battle of Ypres. See Ypres, Battles of.

Graves. Name of wine produced in the Graves district of Gironde, France. It is generally dry, light, and more alcoholised than claret, with a distinctive flavour imparted by the gravelly soil. Graves is either white or red, but in England the name is usually associated with the white variety. *Pron. Grahv.*

Graves, THOMAS GRAVES, BARON (c. 1725–1802). British sailor. He entered the navy when very young,



1st Baron Graves,
British sailor
After Northcote

served in the expedition to Cartagena (1741), and was present at the battle off Toulon (1744). In 1758, after service in Africa and the English Channel, he fought under Rodney at the bombardment of Havre de Grâce. Promoted rear-admiral in 1779, in 1780 he sailed to America and in 1781 took part in the action of the Chesapeake, and became commander-in-chief of the station.

His actions, especially his failure to relieve Cornwallis when besieged at York, caused much discussion, but he was promoted vice-admiral in 1787 and in 1788 was made commander-in-chief of Plymouth. In 1794 he became admiral, and for his conduct in the battle of June 1 was made an Irish peer and granted a pension of £1,000. He died Feb. 9, 1802.

Graves, ALFRED PERCEVAL (b. 1846). Irish author. Born in Dublin, July 22, 1846, a son of the



A. Perceval Graves,
Irish author
Elliott & Fry

bishop of Limerick, after graduating at Dublin University, he entered the home office, afterwards becoming an inspector of schools. He began his literary career at the age of 14, with a Christmas Ode in a Liverpool paper. Father O'Flynn, the poem by which he was first known, was written in 1872 and appeared in The Spectator, but was not published as a song until 1882, when it came out in a collection of Irish songs, arranged to Graves's words, entitled Songs of Old Ireland. Among other works by him are Songs of Irish Wit and Humour and The Irish Song Book, 1894. Graves took a prominent part in the founding of the Irish Literary Society, of which he was twice president.

Graves, CHARLES LARCOM (b. 1856). Author and journalist. Son of the bishop of Limerick, he was



Charles Graves,
British author
Elliott & Fry

born Dec. 15, 1856, and educated at Marlborough and Christ Church, Oxford. Engaged in tutorial work in Manchester, 1880–84, he became a journalist in London, and was assistant editor of The Spectator, 1899–1917. He joined the staff of Punch in 1902. He is author of The Life and Letters of Sir George Grove, 1903; Life and Letters of Alexander Macmillan, 1910; Mr. Punch's History of the Great War, 1919; and numerous works in a lighter vein, including The Blarney Ballads, 1889; The Hawarden Horace, 1894–96; The Diversions of a Music Lover, 1904; Humours of the Fray, 1907; and (with E. V. Lucas) Wisdom While You Wait, Signs of the Times, and Hustled History.

Graves, CLOTILDE INEZ MARY (b. 1864). Irish novelist and playwright. Born at Buttevant, co.



Clotilde I. M. Graves,
Irish novelist

Cork, June 3, 1864, she studied art, and then turning to the drama and literature won popularity under the name of Richard Dehan, in 1910, with The Dop Doctor, a realistic story of life in S. Africa during the Boer War. This success was followed up by a number of capital stories, including Between Two Thieves, 1912; The Man of Iron (Bismarck), 1914; and Earth to Earth, 1916. Between 1887 and 1907 she wrote a number of plays, including Katherine Kavanagh, A Mother of Three, and St. Martin's Summer.

Graves, SIR THOMAS (c. 1747–1814). British sailor. Entering the navy, he served in the Seven



Sir Thomas Graves,
British sailor
After Northcote

Years' War, and in 1773 sailed to the Arctic seas under Captain Phipps. The following year he went to America, where he was employed in the prevention of smug-



gling. In 1779 he commanded a sloop, and in 1781 was advanced to post rank. He was in the action of the Chesapeake, 1781, that of St. Kitts, 1782, and of Dominica in the same year. In 1800 he was given a command under Lord St. Vincent, and the next year was promoted rear-admiral, sailing to the Baltic under Sir Hyde Parker. He was Nelson's second in command at the battle of Copenhagen and was knighted for his services. On his return he retired, and died at his house near Honiton in 1814.

Grave's Disease. Alternative name for the disease known as Exophthalmic Goitre (*q.v.*).

Gravesend. Parl. and mun. bor., river port, and market town of Kent, England. On the right bank of the Thames estuary, 24 m. E. of London by the S.E. & C. and L. & T. (M.) Rlys., it is opposite Tilbury, with which there is ferry communication. It is a customs and pilot station, a port under the Port of London Authority, and the headquarters of the Royal Thames Yacht Club. The market,



Gravesend arms

owned by the corporation, has existed since the close of the 13th century. The town has electric lighting works, town hall, a library, and, in the Imperial Paper Mills, Ltd., the second largest and the most modern business concern of its kind in the United Kingdom. The frontage of the paper mills is directly on the river, and there is a jetty opposite the main entrance, so that ocean steamers can unload their cargoes of wood pulp within a few feet of the paper-making plant. Close by is a branch printing office of The Amalgamated Press.

Gravesend has a history going back to pre-Norman times. In 1380 the town was partly burnt by the French, and it shared in the Wat Tyler rebellion. George I was

welcomed here on his accession to the throne, and Edward VII, when prince of Wales, landed here with his young bride, Alexandra. Gravesend's first charter is dated 1562. In the parish church of S. George are memorials of the

Gravesend gives its name to a co. div. returning one member to Parliament. Market day, Sat. Pop. of mun. bor. 28,115.

Gravimetric Analysis. Method of obtaining the constituents of any substance by weighing, as distinct from volumetric analysis, which obtains them by consideration of the cubical contents.

Gravina. City of Italy, in the prov. of Bari. It stands on an eminence on the left bank of the Gravina, 29 m. direct and 63 m. by rly. S.W. of Bari. Over 1,000 ft



Gravesend, Kent. The works of the Imperial Paper Mills, Ltd. Top, left, the Jubilee Clock Tower

Indian Princess Pocahontas (*q.v.*), who saved the life of Captain John Smith (*q.v.*). There are two piers. Rosherville Gardens, 1 m. to the W., were once a popular resort for Londoners.

Shipbuilding, brewing, and shrimp fishing are among the industries, while vegetables and fruit are grown in the surrounding districts.

above sea level, it possesses a 15th century cathedral, a castle of the Emperor Frederick II, afterwards belonging to the Orsini, and medieval walls and gateways. Besides Santa Sofia, there is a rock-hewn church, with ancient paintings. In the vicinity are prehistoric tumuli, and a castle of the Hohenstaufen. Pop. 19,900.

GRAVITATION: THE UNIVERSAL LAW

W. D. EVANS, M.A., King's College, Cambridge

This article discusses the general conception of gravity and the theories which have been formulated to explain it. See also the articles Ether; Matter; Relativity

Gravitation (Lat. *gravitas*, weight) is the universal law governing the motions of all material bodies.

The simplest manifestation of gravitational force is the property of a body known as its weight, in virtue of which it falls to the earth, or if supported, exerts a downward pressure. When the earth was conceived as flat, the weight of bodies was interpreted as the result of a natural tendency "downwards," but when the idea of the spherical form of the earth was accepted, it became clear that the direction which was "downwards" for one place on the earth was "upwards" for the antipodes, and that the natural tendency was for bodies to fall towards the centre of the earth. The fall was not

necessarily direct, as a body might evidently fall in a curved path.

Gravitation as a general law was advanced by Sir Isaac Newton as a mechanical explanation of the paths of the planets around the sun. Newton showed mathematically that these paths could be accounted for by ascribing to the planets a tendency to fall to the sun, similar to the tendency to fall to the earth which is observed in bodies on the earth's surface, and he proved that this tendency to fall varied in intensity inversely as the square of the planet's distance from the sun. He assumed the existence of an attraction exerted by the sun on the planet, and likewise varying as the inverse square of the distance; and this attractive

force was known as the force of gravity. A similar attraction accounted for the motion of the moon around the earth, this force being smaller than the attraction of the sun in proportion to the much smaller mass of the earth.

The next step in the development of the theory was to extend the operation of the attractive force of gravity to the small particles of matter which ultimately make up the masses of the great heavenly bodies. Newton showed, for example, how the small attractions of the earth's particles would combine to form the joint attraction to the centre of the earth, and was thus led to his formula of gravitation: "Every material particle in the universe attracts every other particle with a force whose direction is that of the line joining the two, and whose magnitude varies directly as the product of their masses, and inversely as the square of their distance apart." Newton made no attempt to account for this attractive force, which, it should be noticed, was independent of the kind of matter, and acted at a distance without any obvious medium of transmission.

Theory of Relativity

Such was the theory of gravitation as it left the hands of Newton, with difficulties which no one perceived more clearly than its originator, but still a marvellously successful explanation of observed facts so far as it went. In spite of the advances made in physical science during the intervening two centuries, no more was learnt about the nature of gravitation until within the last few years. Knowledge was gradually accumulated as to the nature of light and the operation of electrical forces, and great generalisations like the "conservation of energy" were introduced and consistently verified, but gravitation long remained obstinately apart, an obscure enigma which still presented the anomaly of an incomprehensible "action at a distance." Certain difficulties in the theories of light and electricity led to the introduction, in the early years of the twentieth century, of the so-called theory of relativity, which has had a revolutionary effect on the fundamental ideas of mechanics and physics, and in the hands of Einstein has thrown a new light on the problem of gravitation.

Einstein obtained a new law of gravitation, derived not from observation, but from pure reasoning, which differs but slightly from Newton's law in its application to the cases within our knowledge. There were three deductions from

Einstein's theory of gravitation in which its differences from Newton's law were open to experimental verification, and in two of the three cases the result has gone in favour of the new theory.

According to Einstein the ellipses in which the planets revolve about the sun should themselves be in course of gradual rotation; such an effect had long been known in the case of the planet Mercury, although the amount of the rotation was extremely small, amounting only to 43 seconds of arc in the last century. Einstein was successful in showing that this result would follow from his theory, correct to a second, and also that in the cases of the other planets the effect would be too small to be measurable.

The second deduction from the theory was that light rays, passing near the sun, would be deflected from their course by a calculable amount; this prediction was verified in the most striking way by the British solar eclipse expedition of 1919.

The third deduction, a tiny displacement of the lines in the sun's spectrum, is still (November, 1920) a matter of dispute.

Although it is as yet too soon to pronounce definitely that Einstein's theory contains the whole truth about gravitation, its success in explaining the observations of astronomers entitles us to credit its originator with a step forward comparable to that of Newton, while the derivation of the law of motion of the universe from general reasoning may justly be considered the most astonishing example of the power of pure thought in the history of science.

Gray, ASA (1810-88). American botanist. Born at Paris, New York State, Nov. 18, 1810, he entered



Asa Gray,
American botanist

the medical school at Fairfield at the age of 16. He qualified as a physician, but never practised. Before he was of age he had entered into correspondence

with leading botanists, including John Torrey, the state botanist, whose assistant and colleague he ultimately became. In 1838 the new university of Michigan offered him the chair of botany, which he accepted on condition that he might first spend a year of study in Europe. But an engagement with Torrey kept him in New York, and from 1842

until his death he was professor of natural history at Harvard. He died at Cambridge, Massachusetts, Jan. 30, 1888.

Gray, DAVID (1838-61). Scottish poet. Born near Kirkintilloch, Dumbartonshire, Jan. 29, 1838, the son of a hand-loom weaver, he was educated at Glasgow University. In 1860 he came to London with Robert Buchanan (*q.v.*) to begin a literary career. He died Dec. 3, 1861, of consumption, developed from a cold caught from spending his first London night in Hyde Park. His best work is his sonnet sequence, *In the Shadows*. See David Gray and other Essays, R. Buchanan, 1868.

Gray, ELISHA (1835-1901). American inventor. Born at Barnesville, Ohio, Aug. 2, 1835, in 1867 he brought out a patent for an improved telegraph apparatus, and nine years later filed specifications for the telephone, which he claimed as his own invention. The U.S. supreme court, however, awarded the patent to A. G. Bell. Gray invented many improvements in telegraph and telephone appliances, which he manufactured at Chicago and Cleveland. He died at Newtonville, Massachusetts, Jan. 21, 1901.

Gray, GEORGE (b. 1892). Australian billiard player. Son of Harry Gray, the professional champion billiard player of Queensland, when only 17 years of age he created a sensation in the billiard world by his wonderful hazard play, making 831 off the red ball in a break of 836.

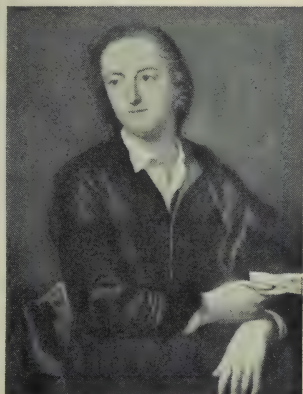
He came to England in 1910. While playing against Harverson in London on March 17-18, 1911, he compiled, using crystal-ball balls, an unfinished break of 2,196 (1,944 being off the red).

Gray, JOHN EDWARD (1800-75). British naturalist. Born at Walsall, Feb. 12, 1800, he entered the British Museum as an assistant in 1824, and in 1840 was appointed keeper of the zoological collections. He wrote various works on natural history, ranging from whales down to seaweeds, and was noted for his study of the British non-marine mollusca. He died March 7, 1875.

Gray, THOMAS (1716-71). English poet. Born in London, Dec. 26, 1716, the fifth child and only survivor of a family of twelve



George Gray, Australian billiard player



After J. G. Ecardt in the
Nat. Portrait Gallery

children, he was educated at Eton, where he was a school friend and contemporary of Horace Walpole. After four years at Peterhouse, Cambridge, where he went in 1734, Gray accompanied Walpole on a three years' tour on the Continent. The scenes of travel made a deep and lasting impression on Gray's mind, though the end of the tour was marred by a quarrel between the two friends, each returning home alone. Shortly afterwards, in 1742, Gray went back to Cambridge to resume the classical studies he loved, and in Cambridge, first at Peterhouse and afterwards at Pembroke, he made his home for the rest of his life, save for brief periods, as, for instance, when he visited Scotland in 1765. In 1757 he was offered but declined the poet laureateship, and in 1768 became professor of modern history at Cambridge.

Apart from translations from the classics, Gray's first poem was the Ode to Spring, followed by the Ode on a Distant Prospect of Eton College and the Hymn to Adversity; all these appeared in 1742.



Thomas Gray. The poet's tomb in the beautiful churchyard of Stoke Poges, near Slough
Homeland Association, Ltd.

In 1747 appeared the Ode on the Death of a Favourite Cat, an earnest of his renewed friendship with Walpole, to whom the cat belonged. Three years later came the Elegy Written in a Country Churchyard. The inspiration came from the churchyard at Stoke Poges (q.v.), and the poem, made familiar by many quotations, is one of the most beautiful and exquisitely finished ever written. Other well-known poems are The Progress of Poesy, 1754, a magnificent piece of work written in the so-called Pindaric metre; The Bard, 1757; The Fatal Sisters, 1768; The Descent of Odin, 1768. The two last were the fruits of the Norse and Icelandic studies which occupied his later years.

Very small in bulk, all Gray's work is that of a consummate artist. Though influenced by the prevailing 18th century conventionalism, he shows a depth of thought and feeling notably absent from most contemporary poetry. Temperamentally shy and reserved, and of melancholy disposition, he was capable of sincere friendship with the few who could appreciate his real nature.

Gray died at Cambridge, July 30, 1771, and was buried in Stoke Poges churchyard. A monument to him consisting of a large sarcophagus was erected in 1799 by John Penn in a field adjoining the churchyard, and a tablet was unveiled on the walls of 39, Cornhill, London, his birthplace, in 1918. There are busts of the poet at Eton and at Pembroke College, which latter was largely rebuilt 1870-79 out of a building fund started in his honour in 1776. There is also a monument to his memory with a medallion portrait in Westminster Abbey. See English Literature.

J. McBain

Bibliography. Lives, J. Mitford (prefixed to 1814 edition of works); E. Gosse, 1903; Life and Letters, W. Mason, 1774; Gray and his Friends, D. C. Tovey, 1890.

Grayling (*Thymallus vulgaris*). Fish of the salmon family. It is fairly common in English rivers, but has only recently found its way to Scotland and is still absent from Ireland. Easily recognized by its large and many-rayed dorsal fin, it occasionally attains a weight of 4 lb., and is a good table fish.

Grayling Butterfly. (*Satyrus semele*). British butterfly of heathy and uncultivated lands, found also in temperate Europe, N. Africa, and W. Asia. The wings, which have an expanse of about 2 ins., are smoky-brown in tint, with a broad zigzag ochreous band near the blackish margin. This band bears two white-centred black spots on the forewing and a smaller one on the hindwing. The male is smaller than the female, and the markings are less bright and distinct. The brown-striped, drab-coloured caterpillar feeds upon various wild grasses. See colour plate, Butterfly, No. 34.

Grays OR GRAYS THURROCK. Urb. dist. and market town of Essex. It stands on the Thames, 20 m. from London, and is served by the London, Tilbury & Southend Rly. The chief industries are brick and cement making. Near are some chalk pits, of interest to the scientist. Pop. 16,000.

Gray's Harbour. Inlet of Washington, U.S.A. It has three small ports of Hoquiam, Aberdeen, and Cosmopolis, which are served by the N. Pacific and other rlys., and are important for the trade in lumber, canned fish, and furs. The U.S.A. government has built a system of jetties which helps to maintain a minimum depth of 24 ft. to a point 4 m. above Aberdeen on the Hoquiam river. The entrance, which is $\frac{3}{4}$ m. wide and 100 ft. deep, is obstructed by a shifting bar 3 m. out; the area at low water is 30 sq. m. There are facilities for ship repairs and tug boats.

Gray's Inn. One of the four inns of court, London. On the N. side of Holborn, with Gray's Inn Road (formerly Gray's Inn Lane) on the E. and Theobald's Road (formerly King's Road) on the N., near the Chancery Lane station of the C.L.R. (Tube), it covers 30 acres, on the site of the old prebendal manor of Portpool, town residence of the lords Gray de Wilton, 1315-1505. It passed to



Grayling, a British fresh-water fish of the salmon family

the priory of E. Sheen, Surrey, who leased it to law students, and has been a freehold of the Ancient and Honourable Society of Gray's Inn since 1733. Two chancery inns, Staple Inn and Barnard's Inn,

were formerly attached. The cognizance of the society is a griffin, which was engraved in a work by Edmund Bunny, *The Sceptre of Judah*, 1584, inscribed *Gryphus Graienis*.

The hall, 1555-60, in which Shakespeare's *Comedy of Errors* was acted, 1594, is lighted by mullioned and transomed windows, with a bay window N., has an open hammer-beam roof, carved wainscoting and screen, and some notable portraits. Here, on every grand night, is honoured the toast, To the glorious, pious, and immortal memory of Queen Elizabeth. During the Great War it narrowly escaped destruction, an incendiary bomb which fell on an adjoining lobby being successfully extinguished before much serious damage was done. The chapel is thought to occupy the site of the old chantry of Portpool. The library, rebuilt 1883-84, contains 30,000 volumes and MSS. The walks or gardens, the special glory of the inn, were laid out 1597-1600, according to tradition under the supervision of Francis Bacon, who is said to have planted the famous catalpa tree (see *Indian Bean*), the oldest in England, which may have been brought across the Atlantic by Raleigh. In Charles II's time and later the walks formed a fashionable promenade.



Gray's Inn arms

Bacon had chambers at No. 1, Coney Court (burnt 1678), from 1576-1626; here he wrote his *Novum Organum*, planned his *Garden of the Months*, and dated his *Essays*. He was made a bencher, 1586, duplex reader 1600, and treasurer 1608. A memorial statue by F. W. Pomeroy was unveiled in South Square, June 2, 1912. Other eminent names associated with the inn are those of Nicholas Bacon,



Gray's Inn, London. The 16th century hall, with fine panelling and hammer-beam roof; looking towards the benchers' table

Lord Burghley, Samuel Butler, George Gascoigne, the poet; Sir William Gascoigne, the judge; Oliver Goldsmith, Edmund Hall, the chronicler; Sir Thomas Gresham, Samuel Johnson, Archbishop Laud, T. B. Macaulay, Sir Samuel Romilly, James Shirley, Sir Philip Sidney, Robert Southey, and Archbishop Whitgift. Within the Jacobean gateway, in Holborn, Jacob Tonson had a bookshop. Dickens was clerk to a firm of attorneys in Gray's Inn, which was also noteworthy for its rookery until the birds were driven off by carrion crows. See *Gray's Inn: Its History and Associations*, W. R. Douthwaite, 1886; *Chronicles of an Old Inn*, Andrée Hope, 1889.

Gray's Peak. Summit of the Rocky Mts. in Colorado, U.S.A. Situated about 50 m. W. of Denver, it attains an alt. of 14,341 ft., and is named in honour of Asa Gray, the American botanist.

Graz or Gratz. Town of Austria, the capital of Styria. It is situated on both banks of the Mur, here crossed by seven bridges, 90 m. S.W. of Vienna. Graz lies in picturesque surroundings, the original town having grown up round the Schlossberg or citadel, which commands a fine view. Among the notable buildings are the Gothic cathedral (15th century), the parish church with an altar-piece by Tintoretto, and the Renaissance Landhaus. The Johanneum contains many interesting collections and a library of nearly 200,000 volumes. The university, founded in 1573, has four faculties, and

before the Great War had about 2,000 students. Graz is industrially important, with large steel works and rly. shops. Other manufactures are cloth, leather, paper, etc. Pop. 151,781.

Graziani, GENERAL French soldier. In the Great War he was appointed chief of the staff in 1915, and attended important war councils, including that of Jan., 1916, in London. He resigned through ill-health, Sept., 1916. In 1918 he commanded the 12th French corps in Italy, and from March -Oct. cooperated with the British.



General Graziani, French soldier

Grazier. One who pastures and rears cattle for the market as distinct from one who breeds stock. See *Agriculture*; *Cattle*; *Farm*.

Great Adventure, THE. Modern comedy by Arnold Bennett, founded on his novel *Buried Alive*. It was produced at The Kingsway, London, March 25, 1913, and ran for 673 performances. The leading parts were played by Henry Ainley and Wish Wynne.

Great Barrier Reef. Coral reef 1,200 m. long, off the N.E. coast of Australia. It covers an area of 100,000 sq. m., and is the greatest oceanic feature of its kind in the world. It acts as a vast natural breakwater, the channel separating it from the Queensland coast—10 m. to 30 m. wide—providing a safe sea passage of extraordinary tropical beauty, studded with islands, of which Hinchinbrook is the largest. There are numerous deep sea passages across it, opposite which lie important towns (e.g. Townsville and Rockhampton), and river-mouths (Burdakin, Fitzroy, Burnett), Raine Inlet being the safest. Pearl and *bêche-de-mer* fishing is carried on. Captain Cook was the first to cross the reef. See *Coral Reef*; consult also *Great Barrier Reef*, W. Kent Saville, 1894.

Great Basin. Interior drainage area of the western U.S.A. It covers nearly the whole of Nevada and parts of Utah, Idaho, Oregon,



Graz, Austria. The Haupt Platz or principal square. On the hill behind is the citadel

and California, is bounded W. by the Wasatch Mts. and E. by the Sierra Nevada and the Cascades, and covers an area of more than 200,000 sq. m. A vast arid region diversified by a series of independent mt. ranges extending from N. to S., its highest altitude approaches 5,000 ft., from which it slopes away to the S. and dips beneath sea level.

Lakes are numerous, and among the largest are the Great Salt Lake and Lakes Sevier and Utah on the E., and Lakes Carson, Walker, Owens, Harney, and Malheur on the W., all saline or drained to salt lakes. The only considerable permanent river within the basin is the Humboldt. Where irrigation has been applied the soil is fertile, but the greater part of the region is desert. Much mineral wealth underlies the basin, and vast tracts are covered with alkali and salt.

Great Bear. Popular name of the well-known northern constellation *Ursa Major* (*q.v.*).

Great Bear. Extensive lake of Canada. In the N.W. Territories, it touches the Arctic Circle. Irregular in shape, it has a length of 176 m., and breadth varying from 25 m. to 46 m.; its area is 11,200 sq. m., and its average depth 270 ft. Frozen over for the greater part of the year, it abounds in fish, and discharges into the Mackenzie river by the Great Bear River. The trading station of Fort Franklin is on its shores.

Great Britain. Name used for the island which includes England, Wales, and Scotland, also the adjacent small islands. It is thus the United Kingdom less Ireland. The official use of the word dates from 1603, when James I united the crowns of England and Scotland, and called himself king of Great Britain. There was much objection to this style, which was declared illegal by the courts of law, but it persisted. The word had been used previously, but in a looser, more poetic sense, having originated in the desire to distinguish Great Britain from Little Britain or Brittany. *See* Britain; England; Scotland; United Kingdom.

Great Central Railway. English rly. company, the main line of which runs from London to Manchester. Its total mileage is 2,688, and on this basis it ranks seventh among English rlys. Its London terminus is Marylebone



Great Central Railway arms

Station and Manchester terminus London Road. The line also serves Sheffield, Nottingham, Leicester, Bradford, Halifax, and Lincoln, as well as some of the outer western suburbs of London. It owns docks at Immingham, near Grimsby, and at Grimsby itself, and has done much to develop both ports. Its goods traffic consists largely of the coal of the N. Midlands, which it carries to the coast. It has a fleet of steamers plying between Grimsby and Antwerp, Rotterdam, and other continental ports. It owns four canals—the Macclesfield, the Peak Forest, the Ashton, and the Chesterfield—and several hotels. Its shops are at Gorton and Dukinfield, near Manchester, and its general offices in London. The total capital is over £56,000,000.

The Great Central developed from the old Manchester, Sheffield and Lincolnshire Rly. The latter was originally a line running from Manchester to Sheffield, and opened in 1845. Other lines were absorbed, and soon it was serving Lincolnshire, and had purchased the docks at Grimsby, this amalgamation being formed into the Manchester, Sheffield and Lincolnshire in 1849. Other additions were made, but the great change came in 1897 with the extension to London and the present title. The line from Sheffield to London was opened for goods traffic, 1898, and for passengers, 1899. Since then the line's extensions have been mainly in three areas: Cheshire and South Lancashire, Middlesex and Buckinghamshire, and the East Midlands. It is now a constituent company of the London and North-Eastern Rly. *See* Railways.

Great Circle. Line on the earth's surface which lies in a plane through the centre of the earth, or any circle on the earth's surface which divides the world into two equal parts. Thus all meridians of longitude are halves of great circles, but the equator is the only parallel of latitude which satisfies the conditions, since the planes of other parallels do not pass through the earth's centre. The shortest line joining any two points on the earth's surface is on a great circle, hence the ascertaining of great circles is of great importance in navigation, (*q.v.*).

The great circle through London and Melbourne crosses Calcutta and almost touches Trinidad; that which is the edge of the land hemisphere touches Formosa, Sumatra, and almost touches Japan, Madagascar, and Cape Town.

Great Contract. The financial arrangement suggested in 1611, but not carried out, between James

I and the English parliament. It was proposed by Robert Cecil, earl of Salisbury, that James I should surrender the revenue which he raised from his tenants in the old feudal ways, by aids, fines, etc., and should in return receive a fixed sum of £200,000 a year. The Commons offered £100,000 and then agreed to double that amount, but both sides put forward further demands and the bargain was never clinched.

Great Dane. Name popularly applied to a breed of German boarhounds. It is the largest of the European mastiffs, and has long been bred in Germany and Denmark. It stands 34 inches high at the shoulder, and good specimens weigh about 180 lb. It is still employed in the Black Forest for hunting purposes, but its general use is as a watchdog. It is smooth coated, and should be grey,



Great Dane. Champion Stella of Seesdon, a first prize winner and champion example of the breed

black, or black and yellow in colour. Naturally its ears droop, but are usually trimmed to a pointed shape to give the animal a more alert appearance. The Great Dane was introduced to Great Britain in 1870, when its great size and fine appearance rapidly made it a favourite. In disposition it is friendly and faithful, but its great strength and determined will make it often difficult to control. *See* Dog.

Great Dividing Range. General name of the vast mountain system of E. Australia. It extends from the N. of York Peninsula in Queensland, and trends S. and S.E. to the borders of New South Wales; it then turns S.S.W. through that state and Victoria, terminating at its S.E. extremity. The westerly extension from here is known as the Australian Alps, and also as the Great Dividing Range. The highest summits are found in New South Wales, Kosciusko (7,300 ft.) and Townsend (7,265 ft.) being the loftiest. There are several other peaks over 5,000 ft. The various sections of the Great Dividing Range have different names, *e.g.* the Muniong, Macpherson, and Bellender ranges, and the Blue Mountains.

Great Eastern. British steamship, built in 1858 from the designs of Isambard Brunel. The largest steamship built to that date, she was first called the Leviathan. Her dimensions were: length 692 ft., beam 83 ft., draught 25 ft., and gross tonnage 18,915 tons. She was a screw and paddle vessel and cost about £750,000. Her builders were Scott, Russell & Co., Millwall.

After several vicissitudes the ship was employed in laying the Atlantic cable. Later she laid the French Atlantic cable, the Bombay-Suez cable, and the fourth and fifth Atlantic cables. Sold by auction for £16,000, she was moved to the Mersey and broken up, the materials being sold for about £60,000.

Great Eastern Railway. English rly. company serving the eastern suburbs of London and the



Great Eastern Railway arms

E. counties. Its London terminus is Liverpool Street, and its total mileage 2,626. Large towns served by it include Norwich, Yarmouth, Ipswich, and Cambridge, and it carries daily an enormous number of persons between London and the E. suburbs, as well as to and from Southend and other places on the coast. The company owns steamers which run from Harwich to Dutch ports and Antwerp, possesses hotels, and runs motor-buses in many districts. Its headquarters are at Liverpool Street, and its works at Stratford; its capital is about £54,000,000.

The line took its present name in 1862. It was an amalgamation of several companies, these including the Norfolk, the East Anglian, the East Suffolk and the Eastern Counties. Two lines ran from London, one to Colchester and the other to Cambridge. It is now merged in the London and North-Eastern Rly. See Railways.

Great Expectations. Twelfth novel of Charles Dickens. It was written to increase the circulation of All the Year Round, in which it appeared between Dec., 1860, and Aug., 1861. Philip Pirrip affords a companion study to David Copperfield. His dilemma between the humble ties of his sister's home and his expectations from a mysterious benefactor who afterwards turns out to be a convict he had helped on the marshes, convey a wholesome moral. It was at Bulwer Lytton's suggestion that the story was given a happy ending.



Great Eastern steamship on her first voyage to New York, June, 1860

From a contemporary drawing

Great Falls. City of Montana, U.S.A., the co. seat of Cascade co. On the Missouri river, 98 m. N.E. of Helena, it is served by the Chicago, Milwaukee and St. Paul and other rlys. It is the centre of a mining region, producing copper, silver, gold, lead, iron, zinc, etc. Great Falls has large smelting works, flour mills, and machinery plants, and is engaged in the shipment of wool. The city derives its name from the falls on the Missouri. Pop. 13,948.

Great Fire. London fire which lasted four days and nights of Sept., 1666. It broke out about 2 a.m. on Sunday, Sept. 2, near the oven of one Farynor, the king's baker, in Pudding Lane, near London Bridge. A pile of faggots was by the oven, fitches of bacon stood near; the houses in the lane, one of the narrowest in the city, had projecting storeys, and their woodwork was coated with pitch. Farynor, his wife, daughter, and manservant escaped by the roof, but the maidservant, afraid to risk the climb, was the first victim of the outbreak.

The flames spread slowly until they attacked the cellars and warehouses along Thames side. By 8 a.m. on Sept. 2 London Bridge was blazing. On the Tuesday Cheapside, St. Paul's Cathedral, and Guildhall were destroyed. By Thursday morning only a sixth part of the city within the walls was left standing, the liberties west towards Temple Bar were burnt out, 100,000 people were homeless, and nearly all that had remained of medieval London was obliterated or doomed. So far as is known, however, only about a dozen people were burnt.

The area destroyed within the city walls was 373 acres; without, 63 acres and 3 roods. Besides St. Paul's and the Guildhall, 84 parish churches, 13,200 houses, 44 halls of livery companies, the city gates, Royal Exchange, all the markets except Leadenhall, the gaols, all the Inner Temple except

the hall, church, part of Fig Tree Court, and the gateway to Fleet Street perished. Wharves and landing stages and boats and barges were included in the losses, the total extent of which has been estimated at £10,000,000, a sum equal to at least £40,000,000 of modern coinage.

For a long time the fire was attributed by many people to a Papist plot; to-day it is agreed that it was due to a strong N.E. wind following a period of extremely dry weather, and the inflammable nature of the buildings. Fire-engines were as unknown as fire insurance, and the blowing up of houses by gunpowder had to be resorted to to stay the flames.

The familiar epigram to the effect that the fire began in Pudding Lane and ended at Pie Corner lacks veracity; the fire burnt for 20 hours after Pie Corner had been razed; it ended in the Cripplegate area, at Cock Lane. It was not until 1668 that the task of rebuilding was taken thoroughly in hand.

The Monument opposite Fish Street Hill, erected 1671-77, did not originally contain the ascription of the fire to Popish faction; this was placed upon it in 1681 after the publication of the perjuries of Titus Oates; the words were finally removed in 1830. See London; Monument, The; consult also The Great Fire of London, W. G. Bell, 1920, the first adequate history of the fire, and the Diaries of Evelyn and Pepys.

Great Fish. Bay or inlet of the Atlantic Ocean. It is off S.W. Africa, in lat. 16° 30' S. and long. 11° 48' E. Near the S.W. extremity of Angola or Portuguese W. Africa, it penetrates about 30 m. inland.

Great Fish. River of Cape Province, S. Africa. For many years it formed the boundary of Cape Colony against incursions by the Kafir tribes on the E. It drains over 12,000 sq. m. and rises in the Sneeuwbergen Mts., receiving the waters of the Graak, Tarka, and Little Fish rivers, and enters the Indian Ocean at Waterloo Bay, between Port Alfred and East London. Its length is 230 m.

Great Fish. River of Canada, also called the Back. It rises near the N. shore of Lake Aylmer, N.E. of Great Slave Lake, and, flowing generally in a N.E. direction, dis-

charges into an inlet of the Arctic Ocean after a course of about 500 m. Sir George Back (*g.v.*) explored its shores.

Great Gable. Mt. peak of Cumberland, England. It is about 7 m. S. of Keswick and is 2,950 ft. in alt. Near is Green Gable, 2,500 ft. high.

Great Harry. English warship, built by Henry VIII at a cost of £14,000. She was the first double-decked ship constructed in England, was of 1,000 tons burthen, and is considered to mark the beginning of the Royal Navy.

Greathed, JAMES HENRY (1844-96). British engineer. Born at Grahamstown, Cape Colony, Aug. 6, 1844, he came to England in 1859. He studied engineering under P. W. Barlow, who directed his attention to the shield system



Great Harry. English double-decked warship of 1514
From a picture by Holthein

in tunnelling. This Greathed made use of in the Thames tunnel constructed by him in 1869. He invented the Greathed Shield, which, in 1886, he applied to the construction of the City and South London and other tube rlys. He died Oct. 21, 1896.

Great Lake OR CLARENCE LAKE. Lake of Tasmania, in the co. of Westmoreland. It lies S. of the Great Western Mts., and is 9 m. long and from 2 m. to 3 m. broad.

Great Lakes. THE. Chain of five fresh-water lakes in N. America. Situated between Canada and the U.S.A., they belong to the basin of the St. Lawrence river, by which they are drained to the Atlantic Ocean. In order of size they are Superior, Michigan, Huron, Erie, and Ontario, and their entire water expanse is about 94,100 sq. m.

The surface of Lake Superior is 600 ft. above sea level, and between that lake and Erie there is a depression of 28 ft., but between Lake Erie and Lake Ontario there occurs a fall of about 320 ft., chiefly due to the precipitation of the Niagara river over a limestone ledge, which forms the Niagara Falls. The channel serving Lake St. Clair has been increased from its original depth of 9½ ft. to 20 ft., and the Detroit river has been dredged to a depth of 22 ft. The Sault Ste.-Marie Canal connects Lakes Huron and Superior. Lakes Erie and Ontario are joined by the Welland Canal, which admits the passage of vessels drawing 14 ft., but a canal in course of building will admit vessels of 25 ft. draught.



GREAT FIRE

Scale of Yards

Churches shown this 632 Halls shown this 632
Ward Boundaries Extent of fire

CHURCHES: 1. Allhallows Barking; 2. S. Olave; 3. S. Katherine Coleman; 4. Trinity Christ Church; 5. S. Katherine Christ Church; 6. S. Andrew Undershaft; 7. S. Mary; 8. S. Elnelburga; 9. S. Helen; 10. Allhallows Staining; 11. S. Gabriel or Fen Church; 12. S. Margaret Pattens; 13. S. Dunstan in the East; 14. S. Mary at Hill; 15. S. Botolph; 16. S. Magnus; 17. S. George; 18. S. Margaret; 19. S. Leonard Milk Church; 20. S. Benet Grass Church; 21. S. Dyona; 22. Allhallows; 23. S. Edmund; 24. S. Michael Archangel; 25. S. Peter Cornhill; 26. S. Martin Otewich; 27. S. Anthony (French Church); 28. S. Peter le poor; 29. Austin Friars (Dutch Church); 30. S. Bartholomew; 31. S. Benet Fink; 32. S. Nicholas Acon; 33. S. Clement in Eastcheap; 34. S. Michael; 35. S. Martin Orgar; 36. S. Laurence Pountney; 37. S. Mary Abchurch; 38. S. Mary Woolnoth; 39. S. Christopher; 40. S. Margaret Lothbury; 41. S. Mildred; 42. S. Mary Woolchurch; 43. S. Stephen Walbrook; 44. S. Swithin; 45. S. Mary Bothaw; 46. Allhallows the more; 47. Allhallows the less; 48. S. Michael Paternoster; 49. S. Martin Vintry; 50. S. John upon Walbrook; 51. S. Thomas Apostle; 52. S. Serphe; 53. S. Pancrate; 54. S. Mary Colechurch; 55. S. Martin Pomary; 56. S. Olave Upwell; 57. S. Stephen; 58. S. Alphege; 59. S. Mary Aldermanbury; 60. S. Michael Bassishaw; 61. S. Mary Magdalen; 62. S. Laurence Jewry;

63. S. Mary Magdalen; 64. Allhallows Honey Lane; 65. S. Mary Bow; 66. S. Mary Aldermany; 67. S. James Garlick-hill; 68. Holy Trinity; 69. S. Michael Queenhithe; 70. S. Mildred; 71. Allhallows Bread Street; 72. S. John Evangelist; 73. S. Matthew; 74. S. Peter W. Cheap; 75. S. Michael; 76. S. John Zachary; 77. S. Olave Silver Street; 78. S. Mary Staining; 79. S. Alban; 80. S. Anne; 81. Foster (S. Vedast); 82. S. Leonard; 83. S. Augustine; 84. S. Nicholas Olave; 85. S. Nicholas Cole Abbey; 86. S. Mary Mount-baunt; 87. S. Mary Somerset; 88. S. Peter; 89. S. Mary Magdalen; 90. Christchurch; 91. S. Gregory; 92. S. Dunstan; 93. S. Andrew; 94. S. Benet Hith; 95. Temple; 96. S. Dunstan; 97. S. Bride; 98. S. Andrew; 99. S. Sepulchre; 100. S. Bart. the less; 101. S. Bart. the great; 102. S. Botolph; 103. S. Giles; 104. S. Botolph; 105. S. Botolph; 106. Trinity Minorities; 107. S. Olave; 108. S. Mary Overy.

HALLS: 1. Bakers; 2. Clothworkers; 3. Ironmongers; 4. Bricklayers; 5. Fletchers; 6. Parish Clerks; 7. Drapers; 8. Fishmongers; 9. Dyers; 10. Carpenters; 11. Armourers; 12. Girdlers; 13. Guild; 14. Weavers; 15. Masons; 16. Bakewell; 17. Bay; 18. Founders; 19. Grocers; 20. Mercers; 21. Outlers; 22. Sknners; 23. Innholders; 24. Parish Clerks; 25. Painter Stainers; 26. Saddlers; 27. Goldsmiths; 28. Haberdashers; 29. Blacksmiths.

Great Fire of London. Plan of the area affected by the conflagration of 1666, showing the various wards. The solid black line indicates the course of the old city wall, and the broken line the limits of the fire



Great Lakes. Map of the great inland seas of the United States and Canada, important as waterways to the surrounding states and provinces, showing canals open and projected

The region surrounding the Great Lakes is one of the most productive in North America, and the cheapness of transport afforded by these waterways has enabled the farming, fruit-growing, and mining industries to be developed on a greater scale. Among the ports served by the lake system are Chicago, Milwaukee, Detroit, Buffalo, Cleveland, Erie, Toronto, Hamilton, and Kingston. The level of the lakes, which are unnavigable through ice for about five months in the year, is gradually lowering, and to obviate this dams have been built across the outflow channels. See Erie; Huron; Michigan; Ontario; Superior.

Great Northern Railway. English railway system. Its main line runs from London to York.

Its total mileage is 1,053, and its capital £62,000,000. Among the large towns served by this line are Nottingham, Peterborough, Derby, and Lincoln, while a branch in Yorkshire runs to Leeds, Wakefield, and other towns of the West Riding. By arrangement with the N.E.R. its trains run as far as Berwick, while it has running powers over parts of the G.C.R., and other lines. It is interested in the

G.N. and G.E. Joint Rly., and it also partners the G.C. The company owns three canals. Its headquarters are at King's Cross Station, London, N., and its shops at Doncaster.

The undertaking dates from 1846, when two rival lines, the London and York and the Northern were amalgamated as the G.N.R. In 1850 the main line was opened, and from that in subsequent years branch lines were made through the populous midland counties, into Lincolnshire and into Yorkshire. Of its employees, 1,000 lost their lives in the Great War. It now forms a branch of the London and North-Eastern Rly. See Railways.

Great Northern Railway. Irish rly. co. Its main lines run from Dublin to Belfast, and to Londonderry, other towns served including Dundalk, Enniskillen, Newry, and Drogheda. Its total mileage is 561, and its capital £9,755,704. Its headquarters are at Amiens Street Station, Dublin, and its works at Dundalk. Its services connect with the L. & N.W. steamers from Kingstown, Greenore, and Dublin to Holyhead. The line was incorporated in 1876, being

an amalgamation of earlier undertakings. These included the Ulster rly., dating from 1839, and the Dublin and Drogheda.

Great North of Scotland Railway. Scottish railway company. It was incorporated in 1846, its first line being between Aberdeen and Inverness, but later the western end of this was transferred to the Caledonian Rly. A number of smaller lines were taken over, and other lines were built between them and 1900. The line now runs from Aberdeen to Peterhead and Fraserburgh; and inland to serve Elgin, Ballater, Huntly, and other places in Aberdeenshire and the neighbouring counties. At Elgin it is linked with the Highland Rly. The company maintains a service of motor omnibuses. It is closely connected with the Cal. & N.B. Rlys., the three sharing a station at Aberdeen. It owns several hotels, and the headquarters are at 89 Guild St., Aberdeen. It is now part of the London and North-Eastern Rly. See Railways.

Great Organ. Manual keyboard of an organ which controls the more solid-toned stops. Where there are two manuals, the great



G.N.R. arms



G.N.R. of Ireland arms



G.N. of Scotland Railway arms

is the lower one; where there are more than two, it is usually the second from the bottom. See Organ.

Great Plague. Terrible epidemic of bubonic plague which ravaged London and other parts of England in 1665. In 1603 there was an epidemic of plague in which 33,347 persons died in London, and in 1625 there was another in which 41,313 perished.

For the 15 years preceding 1665 London had been remarkably free from plague. It has been said that the infection was brought from Holland, but this is not certain, as there were always a few cases in London. In June the number of deaths became alarming, and there was a steady increase in the mortality until the end of Sept. During the winter months the epidemic abated. The total number of deaths in London in 1665 was 68,596. At the height of the epidemic the scenes in London were appalling. The doors of the houses in which the sick lay were marked with a red cross and the words "Lord, have mercy upon us," and no person was allowed to enter or leave these houses.

At first the dead were buried separately and in coffins, but when the mortality was at its worst the bodies were simply thrown into great pits. Besides shutting up the houses, fires were burnt in the streets, as these were believed to have a preventive effect. The exceptional virulence of the epidemic was confined to London and the towns in its immediate vicinity.

The plague lingered on in London through 1666, and its eventual disappearance was probably helped by the Great Fire of that year, which swept away a large area of overcrowded, narrow, and insanitary streets. Defoe, in his *Journal of the Plague Year*, published in 1722, gives what purports to be an account of the plague by a contemporary. See *Black Death*; *Plague*.

Great Popo. Port in the French colony of Dahomé. It is situated in the extreme W. of the country, 25 m. W. of Whydah. Pop. 2,115.

Great Powers. Term applied, especially during the 19th century, to the dominating countries of Europe. Their agreement virtually decided the peace of the world. The Congress of Vienna, in 1815, established or confirmed the right of France, Great Britain, Austria, and Russia to be Great Powers, and after its unification Italy was added. Towards the end of the 19th century, the influence of Germany, the U.S.A., and Japan in world politics brought them into the list of Great Powers. The Great War destroyed

Russia, and revealed the comparative weakness of Austria and Italy, so that now the Powers that really count number only four.

Great Queen Street. London thoroughfare linking Drury Lane with Kingsway, W.C. Constructed about 1629, and named after Queen Henrietta Maria, many of its houses were built by Inigo Jones's pupil Webb. Here are the Freemasons' Hall, 1775-76; Freemasons' Tavern, 1786, and Kingsway Theatre, 1900. Lord Herbert of Cherbury wrote his *De Veritate* here, and Sheridan is said to have written *The School for Scandal* at No. 55. Joshua Reynolds and William Blake worked here as apprentices.

Great Rebellion. Name given to the civil war in England which ended in the execution of Charles I in 1649, or, according to another point of view, in the restoration of Charles II in 1660. To the royalists in the time of Charles II, as earlier, the parliamentary movement appeared as a rebellion, and the phrase obtained greater currency when Clarendon called his great work *The History of the Rebellion*. Mature considerations, however, have led people to regard it more as a civil war. See *Civil War*.

Great Rift. Valley or depression of the earth's surface. It extends from the N. of Palestine to near the borders of Natal. It is the longest meridional land valley on the earth, being nearly 5,000 m. in length. Beginning in the neighbourhood of the Lebanon range, its course lies through the Jordan and Dead Sea, the gulfs of Akaba and Suez, and the Red Sea, where it strikes E. through the Gulf of Aden. From Bab-el-Mandeb it crosses French Somaliland and Abyssinia, through Lakes Rudolf, Manyara, and Nyasa to the Sheringoma plateau in Portuguese E. Africa.

At the N. extremity of Lake Nyasa the valley branches off N.W. through Lake Tanganyika, and bearing N. and N.E. it reaches Lakes Edward and Albert. From Lake Tanganyika there are S.W. and S. extensions to Lake Upemba and Lake Mweru.

Great Salt Lake. Extensive water expanse in Utah, U.S.A. It lies in the N.W. part of the state on the E. side of the Great Basin, is about 75 m. long by from 20 m. to 50 m. broad, and has a mean



Great Salt Lake. The Overland Limited or Mormon Express crossing the bridge over the lake

depth of 20 ft. Its surface elevation is 4,220 ft. above sea level, and its area, which varies greatly, according to rainfall, was about 1,750 sq. m. in 1850, but twenty years later its size had increased to 2,175 sq. m.

A natural salt lake, its waters contain about 13 p.c. of mineral salts, principally chloride of sodium, and the production of salt by evaporation is a considerable industry. The lake is fed by the Bear, Jordan, and other streams, and through the Jordan receives the waters of Lake Utah, but it has no outlet. It is remarkable for the fact that its heavy waters do not permit the human body to sink. The existence of the lake was first reported in 1689 by Baron La Hontan. See *Salt Lake City*.

Great Schism. Period from 1378 to 1417 during which two rival popes claimed each to be the sole head of the Church. In 1378 Urban VI was elected pope, the papal court having just returned to Rome after its exile at Avignon. Against him the French party elected an anti-pope, Clement VII. In general the former was recognized by all Christendom save France, Scotland, and parts of Germany and Italy under French influence. Each party elected successors on the deaths of the two popes. Various attempts to heal the breach failed, until in 1415 the Council of Constance ended the schism by the deposition of the anti-pope John XXIII. The rightful pope, Gregory VII, Urban's successor, resigned, and in 1417 a new pope, Martin V, was elected and recognized by both parties. See *Constance, Council of*; *Papacy*.

Great Seal. Emblem of sovereignty, customarily used in some monarchical countries when the will of the sovereign is expressed. In the United Kingdom a new seal is made at the beginning of each reign, the old one being destroyed. Edward the Confessor had one, and its custody was entrusted to the chancellor. Later there was a separate official called the lord keeper, who was responsible for the



Great Seal. Facsimile of the two sides of an impression of the great seal of James II. The original measures $5\frac{1}{2}$ ins. diameter

seal. But since the accession of George III, in 1760, it has been in the keeping of the lord chancellor, although occasionally the office has been placed in commission. There was a separate seal for Scotland until the union of 1707. See Chancellor; Seals.

Great Slave. Lake of Canada, in the N.W. Territories. Its area is 10,719 sq. m., and its shape irregular. It is about 300 m. long and of varying width and has several bays; the Slave and other rivers flow into it, and the Mackenzie carries its waters to the Arctic.

Great Smoky Mountains. Section of the Appalachian system, U.S.A. They extend in a S.W. to N.E. direction between the states of Tennessee and N. Carolina, and attain an alt. of 6,636 ft. in Mt. Guyot.

Great Southern and Western Railway. Irish rly. co. The largest in the country, its main line runs from Dublin to Cork and Limerick, and it also serves Athlone, Waterford, Mallow, Clonmel, Killarney, Kenmare, Valentia, and other towns in the



G.S. & W.R. of Ireland arms

S. and W., and links up at Rosslare with the G.W.R. boat service from Fishguard. Its headquarters are Kingsbridge Terminus, Dublin. Its capital is £14,577,000, and its total mileage open for traffic, 1,130.

Great Wall, THE. Rampart constructed in the reign of Tsin Shih Hwangti (246-209 B.C.) as a protection against the incursions of the Tartars. It stretches from beyond Lanchow, Kansu province, in the W. to Chihli province, where it ends within a few miles of the sea at Shanhaikwan; the total length being about 1,400 m. Originally from 20 ft. to 30 ft., with towers 40 ft. to 50 ft. high at intervals of 200 yds., it has crumbled away to a low mud

wall in the W., with wide gaps. It is best preserved in the neighbourhood of Peking. See China.

Great War. Name usually given to the struggle extending to nearly every part of the world that opened with Austria's attack on Serbia in July, 1914, and ended with Germany's surrender Nov. 11, 1918. In this Encyclopedia its various battles are described under their respective headings (see Battle), while there is a general account of the whole struggle under War, Great. The Great War is the title of a current history edited by H. W. Wilson and J. A. Hammerton that appeared weekly during the struggle. It created a record for a publication of this kind, running for over five years, and was completed in thirteen large volumes.

Great Western Railway. English railway company. Founded in 1835, its first line was from London to Bristol. The system was rapidly extended, both by construction and purchase, until it became the chief line serving the W. of England. Continuous extensions were made, and the line now serves Birmingham



Great Western Railway arms

and the Midlands, Devon and Cornwall, Bristol and S. Wales.

The company has a steamboat service to Ireland, Fishguard to Rosslare, opened in 1906, while the Severn Tunnel, 1887, shortened the journey to S. Wales. It has greatly developed motor-bus services as feeders to the lines, while its non-stop to Plymouth and Torquay, and its services to the Cornish watering-places are among the most efficient pieces of modern railway management. It owns docks at Plymouth, Birkenhead, and elsewhere, manages the har-

bour at Fishguard, and has hotels. Its mileage is 2,996, and its capital over £100,000,000. The principal locomotive and carriage works are at Swindon, and its headquarters are at Paddington. During the Great War the company ran 33,615 trains for the forces, of which 5,000 were ambulance trains. In the grouping scheme it absorbed various other lines. See Railways.

Greaves (old Fr. *grève*, shin-bone). Armour for the lower part of the legs.



Greaves. Mailed leg, showing greave between knee and ankle

Bronze or pewter greaves were worn by the ancient Greeks and Romans (Gr. *knemides*, Lat. *ocrae*). In medieval times they were frequently richly embossed and ornamented. They were lined with some soft

material and fastened by ankle rings and straps. See Armour.

Grebe (*Podiceps*). Genus of diving birds, five species of which occur in Great Britain. They are remarkable for their curiously lobed feet, rudimentary tail, and the backward position of the legs which causes them to assume on



Grebe. Great crested grebe on her nest among rushes

land an upright position like a penguin. They frequent ponds and lakes in summer, and some go to the sea in winter. The little grebe is known as the dabchick (*q.v.*).

Greco, EL. Name by which the painter Domenico Theotocopuli (*q.v.*) is generally known.

Gredos, SIERRA DE. Mountain range of W. Spain, dividing Old Castile from New Castile and Estremadura. It is a S.W. continuation of the Sierra de Guadarrama, and is about 100 m. in length.

GREECE: IN ANCIENT TIMES AND TO-DAY

HAMILTON FYFE and A. D. INNES, M.A.

This article describes the existing State of Greece, saying something about its industrial and other activities. Its history is then outlined, while articles on its Art, Law, Literature, and Religion follow. See the articles on Greek statesmen, both ancient and modern, e.g. Pericles, Themistocles, and Venizelos; and those on Athens, and other cities. See also Alexander; Europe; Macedonia; Sparta, etc.

Greece lies in the S. of the Balkan Peninsula with a very long coastline to the Aegean and Ionian Seas, including a number of islands in the Aegean Sea and off the coast of Asia Minor.

Its superficial area is larger than that of England, but so much of it is mountainous that it could never support a large population. The mountains, though not very high, divide the country into a number of small districts between which communication is difficult.



Arms of Greece

It is the sea which links up the different regions of Greece. There are no long rivers; most of them dry up in summer. There are many lakes of moderate depth; one of the largest, Copais in Boeotia, has been drained and turned into a most fertile tract of land by a British company. There are only a few forests and little wooded country. The climate varies considerably; generally it is sub-tropical on the lower levels, and subject to extremes of heat and cold. Whether the present inhabitants are truly descended from the ancient Greeks is disputed by many. There have been so many invasions of the country, both warlike and peaceful, by other races, chiefly Slav, that the admixture of stocks must be considerable.

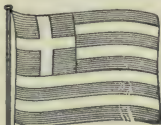
Modern Expansion

Owing to its recent extension, it is a very much larger country than was ancient Greece. Before the Great War it already covered nearly 42,000 sq. m. with a population of nearly 5,000,000. In consequence of the Great War it received a large part of the Turkish province of Izmir or Smyrna in Asia Minor (2,500,000 inhabitants and 21,000 sq. m.) and western Thrace, formerly Bulgarian and before that Turkish (500,000 inhabitants, 2,500 sq. m.), including the whole of the Aegean seaboard in Macedonia, and the islands of the Dodecanese. The great idea of the modern Greeks, a vast dominion including Macedonia, Thrace, Epirus, Asia Minor, Crete, and the whole of the Aegean Islands, was thus to a large extent realized.

It was always hoped that the capital of this Greater Greece

would be Constantinople, and many Greeks still cherish this ambition and thus regard Bulgaria as "the enemy," the Bulgarians being the people most likely to dispute with Greece the inheritance of the Turk. This Greek idea was for the time being shattered as the result of the treaty of Lausanne (1923), which gave back to Turkey much territory. A tide of emigration to the U.S.A. set in during the early years of the 20th century, and after the Balkan War in one year (1913-14) 45,000 Greeks left their country. Afterwards, however, the drain was not so serious.

Since April 1924 Greece has been a republic. There is only one legislative chamber, the Boule or chamber, to which each 16,000 inhabitants return one member. They are elected for four years, and are paid £160 a year, those who live in the neighbourhood of the capital receiving rather less. If a member



Flag of Greece as a kingdom

is absent without leave for more than five days in a month, he is fined 17s. 6d. for each sitting that he has missed. The chamber must be in session for at least three months every year and cannot transact business unless one-third of its members are present. Call-over is taken at the beginning of every sitting, and much time can be wasted by obstructionists who demand frequent counts. There is a council of state, but its functions are judicial, not legislative, and provisions for a revision of the constitution.

The short white kilt (*fustanella*) is still worn by a great many of the peasants, though in the country, as in the towns, the fashion of wearing coats and trousers and hard felt hats is spreading. In agriculture the peasant proprietors and the cultivators who work on the *métayer* systems are mostly backward. Few have adopted deep digging as a means of keeping moisture in the soil, which, in so dry a climate and in the absence of rivers suitable for irrigation, would add much to the yield of the farms.

The chief crop is that of currants, which are grown on a very large extent of land and exported all over the world. Olives are grown exten-

sively, tobacco is an increasing crop, and wine is made in large quantities, mainly for home consumption, the strong flavour of resin in most of it making it unpleasant to anyone not accustomed to this peculiarity. Only about one-fifth of the country is worth cultivating by present methods. The rest is mountainous and barren.

Of the cultivated lands half are given up to growing food for the population, wheat, barley, rice, and maize. Many peasants eat meat only a few times a year, on festival occasions. Where meat is usual, lamb is the universal dish; vegetables are apt to be scarce; rice as an ingredient of pilaff is very common; marrows stuffed with rice and meat lend variety; sweetmeats are plentiful in some districts; fruit is fairly so, since figs and oranges grow easily; wine is drunk everywhere.

Railways and Steamers

Until 1869 there were no railway communications in the country. Tricoupis ardently encouraged their construction, but in a mountainous country this is a costly business and there would not probably for a long time be traffic enough to make new lines pay. There are good steamer services on the long coast-line. Most of them are run by a Scottish firm which is known all over Greece as "John," because the founder bore the name of John MacDowell.

The Greeks have between seven and eight hundred trading vessels, mostly small, for coasting and island trade. The Corinth canal, which had been talked about for 2,000 years, was completed in 1893, but for a long time it was not used largely and Corinth remained less important commercially than Patras, Volo, Kalamata, and Larissa.

Until 1923 the chief ports were Smyrna and Salonica, the latter acquired after the Balkan War, the former allotted to the Greeks when the Turkish Empire was reduced by the Peace Treaty of Sèvres (1920). Of the other Greek towns known to antiquity Sparta is modern and featureless; Thebes picturesque, but small and sleepy; Laurium is disfigured by the smokestacks and the spoil-banks of mines. Athens is the only centre of population, ancient or modern, which can lay claim to the title of "city."

When it became the capital of the new kingdom it was a village, with only 162 dwellings in it. Now



Greece. Map of the ancient divisions and cities of Hellas, with the classical names of the surrounding seas

it has a population of 175,000, many fine public and private buildings, broad boulevards, and the famous Constitution Square, which is the heart of the city to and from which flow all the currents of its life-blood. It is a mixture of old and new. The roads are mostly execrable and very dusty; goats are driven through the streets and milked at the house-doors; the bazaars resemble those of Cairo and Constantinople. Occasional tall figures in costume belonging to the past mingle with the throng in European clothes to remind one that in far-away districts little has been changed.

Street Life in Athens

The Athenians live much in the open air. They sit outside their numberless cafés and talk politics interminably over cups of Turkish coffee, with glasses of water, or ices, or mugs of Bavarian beer. The cries of newspaper-sellers are heard without ceasing, for everyone wants to know "the latest," just as did the ancient Athenians. The Greeks are, as a nation, anxious to learn, hungry for education, which can be had free from the elementary school right up to the university. The teaching given is inclined to be too purely literary, which creates too large a number of young men desirous of becoming lawyers, newspaper writers, and officials, instead of taking to industry or commerce. Attempts have been made to check this tendency by founding technical and commercial schools. Venizelos took up in 1920 a plan for establishing a public

school on the English model on one of the Greek islands.

Among most of the more highly educated religion is either neglected or kept up merely as a form. But among the peasantry attachment to the Greek Church is as strong as ever. During the struggle for independence, the heads of the Church were the leaders of the nation, and this tie has not been dissolved, though the Church has no real political importance. The state keeps up a connexion with it by paying the bishops; they re-

ceive the same salary as members of Parliament (£160 a year); archbishops get £200. The Moslem religious leaders are also paid by the State to avoid injustice to the Mahomedan population.

In the monasteries strangers are welcomed and hospitably entertained; the monks are usually more intelligent than the priests. Not only they, but all the country people scrupulously keep the many fasts which the Church ordains, and live for numbers of weeks together in Advent, in Lent, and at other seasons, on bread, vegetables, olives, fruit, and fish. There are small communities of Roman Catholics as well as Moslems scattered here and there.

Birthdays and Weddings

In many of their social habits the Greeks retain a religious flavour even if they are not strictly Orthodox in their opinions and practice. For instance, they make much more of the name-day (the day of the saint after whom one is called) than of the birthday; and New Year's Day, which is a Church festival, is observed by all as an occasion for making visits and giving presents. Weddings, on the other hand, are rather social than religious in their character; they are celebrated as a rule in private houses. In the country there are still kept up picturesque and interesting marriage customs, such as that in Euboea, where brides smear honey on the doors of their new homes and throw pomegranates at it; if seeds stick in the honey, happiness may be

expected; if not, heads are shaken. Both in the villages and the towns, and also among the Greeks who live abroad, there is a strong love of country, so perfervid as to be quickly stirred up to aggressiveness. Compulsory service is not felt as a hardship, though from his twentieth year until he has passed fifty the Greek man is at the beck and call of the military authorities.

Industrially the country is not likely to make rapid progress. It has some 2,000 factories, but they are mostly quite small; cotton is the only manufacture on a large scale; agriculturally it can never be rich. Its recent acquisitions are certainly valuable, but heavy taxation would soon provoke discontent. What wiser and cooler-headed Greeks see is that their country needs a long period of quiet and hard, steady work, during which it can consolidate its conquests, and make those advances in civilization which will put the Greeks among the progressive nations of the world.

Hamilton Fyfe

ANCIENT GREECE. The history of ancient Greece may be more correctly called the history of the Hellenes. It is the story, not of that part of Europe now called Greece, nor of a nation, but of a people never united as a homogeneous political body, yet always conscious of a spiritual unity, full of diversities, yet sharing common characteristics which distinguished them all and set them apart from all other races.

All that was most characteristic of the race was indeed concentrated and consummated in one little state, hardly bigger than the county of Kent, upon the Greek peninsula; but Hellas, the Hellenic area, covered not only the modern kingdom of Greece, but all the islands of the Aegean Sea and the western coast of Asia Minor; while the Hellenic expansion dominated Sicily, occupied the ports of southern Italy, and planted colonies on the African coast, and as far W. as Massilia, the modern Marseilles. We shall use the term Greece for the Greek peninsula, Hellas for the Hellenic area, and Greater Greece for the area of expansion.

Minoan Civilization

Recent investigations and excavations lead to the conclusion that before the Hellenes appeared on the scene at all, an earlier race of uncertain origin, having the island of Crete as its centre, had attained a high degree of civilization which is given the name of Minoan. About the 15th century B.C. the Hellenes were pushing down into

Greece, to which the Minoan civilization had not extended. In the 13th century the Minoans, with their superior civilization, extended their ascendancy into the southernmost regions reached by the advancing Hellenes, and established what is called the Mycenaean civilization within the Morea or Peloponnesus.

Achaean and Hellenes

The most inclusive name of the Hellenes at this era was Achaeans or Danaans, with Aeolians and Ionians as subdivisions. About the 12th or 11th century, a new and ruder Hellenic wave, the Dorian, rolled down from the N.W. The Dorian pressure drove first the northern Aeolians, and then the southern Ionians, to push their way across the islands to the coasts of Asia Minor. It was, however, only in the S., in the eastern Morea and on the Isthmus of Corinth, that the Dorians effected a conquest, destroying the Minoan ascendancy, and then carrying their arms eastwards, across Crete and the southern islands, to the southwestern coast of Asia Minor.

By the year 1000 B.C. Hellas had formed itself; Hellenes were permanently established over the whole Hellenic area—the Greek peninsula, the islands of the Aegean Sea, and the coasts of Asia Minor. The time when the Hellenic name superseded Achaean as the common title of the race is uncertain, but it was manifestly later than the shaping of the two great epics of Homer (probably in the 9th century), who speaks always of Achaeans and Danaans, not of Hellenes. The 7th century was the era of the Western Hellenic expansion into Sicily and Italy, due to the fact that eastward expansion was blocked by geographical conditions. Powerful non-Hellenic kingdoms were already established in Asia Minor, against which the Hellenic states on the coast could make no advance across the inland hill-country.

Geographical Influences

Geographical conditions determined the character of Hellenic political development; on the one hand preventing political unification, and on the other fostering a high degree of organization in the separate political units. Every island was made a natural unit by the sea; hill ranges cut up the mainland into small areas, isolated from each other, generally tending to the evolution of a city forming the centre of an agricultural district which became a political unit where the concentrated life fostered a vigorous political activity. But the Greeks, having no common foe,

had no incentive to union either for self-defence or for conquest, the two great motives to unification.

Nevertheless, they had the common bond of religion and language, and the common characteristics of political development which caused them to feel themselves apart from the "barbarians" who had no share in their religious mysteries, and were politically undeveloped. Thus, under normal conditions, to the Greek the enemy to be suspected was the rival Greek state; the alien was the citizen of a rival state.

In each community the course of political development followed the same lines up to a certain point. From the earliest times each little state consisted of a free population of tribesmen, with their slaves—captives, or earlier peoples conquered in war; all ruled over by an hereditary king, controlled or guided by a council of the hereditary clan chiefs whose families formed an aristocracy, while the people periodically assembled for military or other purposes to confirm or possibly to reject the more important projects designed by their rulers. In course of time in every state except Sparta, which retained the kingship under pecu-

established a dynasty more or less permanent, which rested upon the employment of a paid soldiery. More commonly the second or third generation saw the forcible ejection of the tyrant and the recovery of political control by the old aristocratic families in conjunction with wealthy families from the commons, who established an oligarchy; or else the popular party established a democracy.

The more powerful cities usually exercised a certain dominion over a group of their weaker neighbours, but such a dominion rarely extended over so wide an area as that of an average English county.

Thus, by the 6th century B.C. Hellas was composed of a great number of small city states, most of them independent; though the flourishing and wealthy cities of Asia Minor, while remaining autonomous, had been compelled to acknowledge the sovereignty of the Oriental monarchy of Lydia. The 6th century was, roughly speaking, the age of the tyrants.

The Persian Menace

But the second half of this century saw a new portent—the creation of the Persian Empire by Cyrus (*q.v.*), and his successors, Cambyses and Darius (*q.v.*). The



Greece. Restoration of the temple of Demeter, in which the Eleusinian mysteries were celebrated

liar conditions, the monarch lost his hereditary functions, and even if the royal family survived it became absorbed among the other noble houses.

Then came a period of struggle between nobles and commons, usually culminating in the military success of a noble who, having successfully espoused the popular cause, turned his victory to account by assuming a monarchy, shorn, however, of the sacred character originally attaching to the institution. To these monarchs the Greeks gave the name of *tyrannos*, tyrant, or rather absolute ruler. Here and there a tyrant

great empires of the ancient world, Babylonian, Assyrian, or Egyptian, had never touched Europe, and had scarcely penetrated W. of the Taurus Mountains. But now the Persians and Medes from beyond the Euphrates carried their dominion first over the whole of Asia Minor, then absorbed the Babylonian empire, and finally swept into Egypt and subjugated it. The conquest of Asia Minor meant that the Greek cities were included in the great provinces or satrapies organized by the Persian kings; and when Darius crossed into Europe, 513 B.C., and conducted an experimental campaign in the



Greece. Map of the country showing its boundaries as defined by Treaty of Lausanne, 1923

regions N. of the Danube, Hellas became conscious of the existence of an entirely new menace.

The yoke of Persia was light; she suffered her subject peoples to rule themselves after their own fashion so long as they paid their tribute and provided contingents to her armies when called upon. Nevertheless, in 500 B.C. the Ionic cities of Asia Minor revolted against their satrap and called upon their kinsmen across the sea to come to their aid. The revolt was crushed; but aid had actually been sent by Athens, while Sparta, acknowledged by the Greek states of the W. as the premier military state, contented herself with threats.

Darius sent envoys to demand from all the Hellenic states "earth and water," symbols of the recognition of Persia's sovereignty. Many took prudence to be the better part of valour, and yielded.

Athens and Sparta took the lead in refusing with contumely. The result was that in 490 Darius dispatched an expedition which was to teach the Athenians a lesson, since their active participation in the Ionic revolt had excited his particular indignation. Had Athens elected to submit, or had she been wiped out, the future of the world would in all probability have been entirely changed; but although it was in vain that she appealed to the other Greek states, she had made up her mind to stand for freedom at all costs. The Persian host landed on the plain of Marathon; the little Athenian army, supported by none save the loyal city of Plataea, hurled the Persians into the sea.

The glorious victory of Marathon (490) taught the Greeks a different lesson from that which Darius had intended; it was a complete de-

monstration of the enormous superiority of the Greek armament, discipline, and tactics over those of the Persians; it meant that Greek troops well led could hold their own against Asiatics, in face of almost any odds. Ten years later Xerxes, the son of Darius, having resolved no longer to tolerate the defiance of his power by the insolent Westerns, gathered a vast army and fleet to crush their resistance once for all. But in the meantime Athens, guided by Themistocles, had devoted herself zealously to the development of her fleet, and in the face of the vast preparations of Persia the other Greek states had realized that they must either fight by the side of Athens or perish.

Even then the selfishness of the southern Dorians made them reluctant to advance beyond the Isthmus of Corinth, which could be made impregnable. Still, the fear

that Athens might be compelled to make her own terms, involving at least the withdrawal of her fleet and the exposure of Peloponnesus to attack from the sea, drove the Spartans, to whom the control of the land forces were assigned, to occupy first the northern pass of Tempe, and when it was found that that could be turned, the nearer pass of Thermopylae.

Even then nothing more than the advance guard had been sent, while the forces of the Athenians and their island allies were on the fleets which were engaged in holding the Persian navies at bay. The Greek position was turned at Thermopylae; and Leonidas, having dismissed the major portion of his troops, fell at the head of his three hundred Spartans, winning thereby immortal renown, but not saving Hellas. The Persians overran Attica, but the Athenians drew the fleet; of the Barbarians into the great naval engagement in the bay of Salamis (480) where they were annihilated.

Then at last, though again only under threat of the Athenian withdrawal, Sparta prepared for a vigorous offensive against the still vast army which Xerxes yet retained in Greece, an army which was finally and utterly shattered in 479 at Plataea; while the *coup de grâce* was simultaneously administered to the Persian navy on the Asiatic coast at Mycalé. At the same time the Hellenes in Sicily under Gela, tyrant of Syracuse, broke another Oriental wave by a crushing defeat of the Carthaginians at Himera in 480.

The importance of these years to the history, not only of Greece, but of the world can hardly be overestimated. They saw the first grand collision between Orientalism and the vital spirit of Western civilization. The triumph of Persia would have turned Athens into another Tyre at the best; the triumph of the Greeks made her the Athens of Pericles, Aeschylus, Sophocles, Euripides, and Pheidias, the mother of Socrates and Plato.

Of all the Greek states, Athens had the most to gain by a tame submission, the most to suffer through a bold defiance whatever the result might be, the most to lose by defeat. She staked all and saved her soul, and thereby saved the soul of Europe. If Persia had won, Greece would have been emasculated, the Oriental tide would have rolled on into Sicily, and Italy, Rome, at that time "mewing her mighty youth" would have been submerged, the very conception of political liberty would have been blotted out. Nor is it to be believed that, if this had befallen, Greek thought and Greek conceptions of art would have attained to anything like that development which during the next century and a half gave the Greeks that supremacy which has ever since influenced the world.

In 490 the great majority of the Greeks probably believed that resistance to the power of Persia was all but hopeless. In 479 the Greek attitude had become altogether



Greece. Types of the inhabitants. 1. Man from Andravida. 2. Shepherd of Morea in winter coat of straw. 3. Mahomedan peasant. 4. Man from Dhimiyzana. 5. Gendarme of Samos. 6. Bride in costume of Patmos. 7. Peasant woman of Morea. 8. Woman of Corinth

different. There was a widespread disposition to follow up the great victories and to strike at Persia herself. For such an enterprise the first necessity was the whole-hearted unity of Hellas. To rout the Persian navy on the sea, and to shatter Persian armies on Greek soil, was one thing; to invade the Persian empire was somewhat as though England should project an invasion of Europe, as far as the magnitude of the task was concerned; but we should have to think of England as though every county was a separate sovereign state with no central English government.

Obstacles to Unity

The difficulties in the way of united action were greater than those of the thirteen American colonies when they opposed themselves to the power of the Mother Country. A real continuous unity of action was only possible of attainment under the direction of one recognized and unquestioned control. Despite what Athens had done, Sparta, not Athens, was the only state to which the rest were willing to concede a priority; but though the Spartan troops were admittedly of the best, Sparta herself was quite unfitted for the task of organizing a united Hellas.

Sparta remained inert and apathetic, and when it was left to Athens to take the lead, continental Greece held aloof, though the maritime states formed the Delian League (see Delos) under the Athenian presidency. But a naval league could not do the work.

Before five and twenty years had passed the dream of a war of aggression had in effect faded away, and the Greek states had fallen back into the old attitude of mutual hostilities and jealousies, though with this difference, that they were now grouped roughly either as allies or dependents of Sparta or as allies or dependents of Athens. For Athens, through the Delian League, was founding a sort of maritime empire. At its first formation the states of the league had maintained the navy of the league by providing contingents of ships and men; when they were permitted to substitute money payments, the ships and men were supplied by Athens, so that the navy of the league became virtually the navy of Athens, and the enormously increased power of Athens excited the jealousy of every other state, but especially that of the Spartans.

A further cause of dissension lay in the fact that in almost every Greek state, whether the government was oligarchical or democratic, there existed the two oligar-

chical and democratic parties in fierce antagonism. Oligarchical states favoured Sparta, while democratic states favoured Athens; but the antagonistic party in each state always hoped to effect a revolution with the aid of either Athens or Sparta.

The Peloponnesian War

The result was that, nearly fifty years after the Persian *débâcle*, almost all Hellas was involved in the great conflict between Athens and Sparta, which is called the Peloponnesian War. The struggle opened in 431. After ten years it was suspended, the advantage on the whole lying with Athens, whose naval supremacy was unequivocally established; but an ill-judged attempt to extend her imperial sway by a great expedition to Sicily ended in a tremendous disaster. Sparta seized her opportunity to renew hostilities, and though for a long time Athens held her own, a monstrous blunder at last enabled the Spartans to capture or destroy the greater part of her fleet at Aegospotami, and bring the war to a decisive conclusion, with Spartan supremacy completely established in 404.

The next twenty years demonstrated the inherent incapacity of Sparta for political organization; she could not rise above the conception of a Spartan dictatorship, a military tyranny. A new adversary arose when Thebes broke from her sway, and, under the leadership of Epaminondas defeated her armies at Leuctra in 371, and created a brief Theban ascendancy which, however, did not long survive the death of the great captain at the battle of Mantinea in 362.

Athens, though she had recovered much of her old strength, was still in no position to renew her bid for the leadership of Greece. But a claimant for that position now appeared in a quarter which had hitherto been regarded as at best semi-Hellenic. On the N. of Greece lay Macedonia, a loosely organized kingdom which had scarcely passed beyond the tribal system. The royal family, however, claimed a pure Hellenic descent. In 359 the Macedonian crown passed to Philip, who was spending his boyhood virtually as a hostage in Thebes. He returned to Macedon to apply there the political and military lessons which he had absorbed.

With excellent military material ready to his hand, he shaped his Macedonians into a highly disciplined army instead of a loose congeries of clan levies; inter-

vened in the affairs of the Greeks; posed as the champion of Hellenism in punishing for an act of sacrilege the northern state of Phocis, which but for his appearance might have made a successful bid for a military supremacy; and then virtually compelled the whole of Greece not only to recognise Macedon as an Hellenic state, but to acknowledge him as the elected leader of Hellas, the captain of its armies in the revived project of an Hellenic war upon Persia.

The entry of Macedon upon the Hellenic stage was in itself a tremendous revolution, for her organized military resources were more than a match for those of any casual combination of the Greek states. Unlike the Persians, Philip could with his Macedonians apply all that the Greeks knew of the art of war, all that had made them a match for ten times their number of Asiatics. The moment had actually come when under Macedonian pressure Hellas might have been unified as a military empire. But in 336 Philip was assassinated and his crown passed to his son, Alexander the Great, a lad of twenty.

Alexander the Great

For a moment the older states thought they could shake themselves free of the new domination; the terrific energy of the young king soon undeceived them. A revolt headed by Thebes was crushed, and Alexander forthwith took up the projected task of hurling the West against the East. In eleven momentous years (334-323) he brought the whole of what had been the Persian empire under his dominion (See Alexander the Great), bursting even through the mountain gateways of India; but his mighty career was cut short when he was no more than thirty-three years of age in 323 B.C.

In the midst of his tremendous and unparalleled activities as a conqueror and leader of armies, the genius of Alexander had not failed either to provide temporary organization of his conquests or to indicate the scheme for permanent structure. The barrier between East and West, between Oriental and Hellenic, was to be broken down. The two were to be fused, each giving of its best to the other. Not only in Egypt but in Afghanistan and Turkistan arose cities which took from him the name of Alexandria, cities where Greeks and Macedonians were planted for the diffusion of Hellenic civilization; Greeks were settled even in the Punjab. But his dream of a universal empire

which was to be fused into homogeneity was not destined to be accomplished.

Dying with no son to succeed him, he left the vast dominion to be striven for among his generals, with the result that after a few years it had fallen into five main divisions, in Europe, in Asia Minor, in Egypt, in Syria, and in the remote East beyond the Euphrates. In the four Oriental divisions Hellenism was only an exotic; a foreign influence, an atmosphere which surrounded Macedonian and Greek dynasts, which left its traces but was never absorbed into the soil. And Alexander, failing to fuse East and West, failed no less to fuse Hellas. The Hellas he led was still only a congeries of small states forced into alliance and dominated by Macedon. So it remained after he was gone.

Athens and Antipater

Alexander was no sooner dead than Athens took the lead in forming a league—from which as a matter of course Sparta and others stood apart—for throwing off the Macedonian yoke; but, after some initial success against Antipater, the regent whom Alexander had left in Macedonia, in what is known as the Lamian war, the league was virtually dissolved by Antipater's diplomacy. Then followed the period of the struggles for supremacy between Alexander's generals, which finally settled on the Macedonian throne the dynasty of Antigonos in 278.

The last of his rivals was Pyrrhus, king of Epirus; but the career of that brilliant military adventurer, who perished in the contest with Antigonos, had scarcely any influence on the story of Greece. The Macedonian kingdom exercised no recognized authority over the Greek states, though it enforced an effective domination wherever only an isolated resistance was offered. As a matter of fact, Antigonos secured his ascendancy by setting up a *tyrannos* who was a creature of his own in most of the states.

Nevertheless, it was at this stage, about the middle of the third century B.C., that there arose among those minor states which had never claimed a leading position, the conception of a free federation of self-governing states, bound together for purposes of foreign policy. In the Peloponnesian district which still bore the ancient name of Achaea, and in Aetolia, facing Achaea, on the northern side of the gulf of Corinth, arose the Achaean and Aetolian leagues of cities, which began by expelling the tyrants who had been imposed

upon them, and assisting their neighbours to do likewise.

Leagues of the 3rd Century

Each of the leagues was organized with what might be called a central federal council with a common commander-in-chief, and one or other was quickly joined by most of the more vigorous cities, though Sparta obstinately stood aloof. Had the Greeks in the day of their greatest glory been able to rise to the conception of an Hellenic federation in which every state would be ready to subordinate its particular interests to the common good, there might conceivably have been a true union and fusion of Hellas. But now it was too late. The leagues were jealous of each other, and Sparta was jealous of both, while both were jealous of Sparta.

Greater Hellas in the W. had never been in close touch with Hellas proper since the episode of the Athenian expedition to Sicily. Then the old struggle with Carthage had been renewed, which in the third century was merged in the struggle between Carthage and Rome. This tremendous contest was brought to a decisive issue in the second Punic War (218–201), which began at the moment when Eastern Hellas was split up between Macedon, Sparta, and the two leagues. Philip V of Macedon, unfortunately for himself, hoped to strengthen his own position by alliance with the Carthaginian Hannibal, which brought down upon him the wrath of Rome as soon as she felt herself free to extend her activities.

Greek States and Macedon

The Greek states were divided generally into those hostile to Macedon, and those which favoured her, and individually into parties which followed the same line. But the first result was that Philip was beaten by the Romans, who proceeded to declare the liberation of Greece from the Macedonian yoke (196). But though Rome abstained from assuming a formal sovereignty, it was obvious that her domination had, as a matter of fact, taken the place of that of Macedon, whose king had been made a dependent of the republic.

Rome had rewarded the states which favoured her at the expense of those which supported Macedon; but the one group considered their gains inadequate, while the other considered that they had been robbed. Consequently, as soon as Philip's successor, Perseus, sought to throw off the Roman domination he received moral support from many quarters, though no material aid. He was decisively crushed at

the battle of Pydna, in 168, and Macedon was partitioned into a group of republics. It was natural that Rome should assume a dictatorial tone towards the states whose conduct she felt justified in resenting, and that those states in their turn should resent her haughty attitude. Again the natural results followed—attempted defiance crushed by overwhelming force, and the pronouncement that since the Greeks persisted in misusing their liberty, they must lose it. The last hopeless effort for Greek independence expired with the siege and capture of Corinth, in 146, when Greece was swallowed up in the Roman Empire.

Greece and Rome

Greece fell, but in falling, in part at least, conquered the conqueror. The Greek spirit and the Roman spirit were poles apart; but if the Roman had in him something which the Greek lacked, he was nevertheless conscious that the Greek compelled his admiration by some quality in which he was himself deficient, and set himself painfully to the sincere flattery of imitation; an imitation not always discriminating, and not always successful. Roman literature and Roman art became palpably the product of effort to reproduce Greek literature and Greek art, seldom more than half understood.

The Roman formulated his canons from the Greek examples, often without grasping what was fundamental, and what was accidental, thereby creating the classicism by which he himself was hidebound; departing, however, entirely from the essential Romanticism of the Greek in the great days of Greece, when the most vigorous individuality had sought its own expression, and by its triumphant success made individuality thereafter afraid of itself. But if it was in the main, not the spirit of Greece, but the form in which it had clothed itself, that the Roman sought to assimilate, there was yet some infusion even of the spirit which may be felt in the work of the greatest of the Roman poets.

This sketch of the political history of the Hellenes shows how the conditions which fostered an extraordinary and unparalleled vitality in individual communities, actually prevented their fusion into a greater homogeneous political organization, so that they never shaped into a nation exercising an imperial sway over other peoples. The function of Hellenism was not, like that of Rome, to conquer and control the world, but to educate it, and to inspire its ideals.

From this time until the beginning of the 19th century, Greece was but a district under alien rule. By conquest it became part of the Roman empire, but except perhaps at Corinth few changes were made by the conquerors. For a time the cities were self-governing as before, subject only to the authority of the Roman governor in Macedonia.

Some of the Greeks assisted Mithradates in his struggle against Rome that began in 88 B.C., while Greece was a battleground in the civil strife in which Julius Caesar was the central figure. Under Augustus and the early emperors conditions were more settled, and this was the age in which Greek thought and culture mainly exercised its powerful influences upon Rome. The province of Achaëa was set up to include most of southern Greece, while steps were taken to form some bond of union between the cities. Hadrian did a good deal for the country in various ways. In the 3rd century Greece was invaded by the Goths, but the Romans drove them out. Later it suffered in the same way from the Visigoths. Christianity made slow progress, for the cultured pagans of Athens were less susceptible to it than the northern barbarians.

Under the Eastern Empire

When the Roman empire was divided, Greece fell to the eastern or Byzantine portion and the language and influence of Greece were dominant at Constantinople. A succession of invaders entered the land and a number of Slavs settled therein, but on the whole the eastern emperors looked well to its defence. The dispute about the worship of images caused trouble and bloodshed. In the 10th century the Bulgarians invaded Greece, but they were severely beaten in 905. More momentous was the advent of the Normans from Sicily and of the Venetians.

In 1204 the Byzantine empire collapsed and Greece passed to the Latin empire of Romania. That only lasted until 1261, from which date until the arrival of the Turks the country was ruled by Frank and other foreign nobles, first drawn eastward by the Crusades. These rulers, called despots, divided between them most of the country, while the Venetians had a foothold on the coast and islands. None of the dynasties, however, succeeded in establishing themselves firmly, and in 150 years or so the emperor at Byzantium was once more master of Greece. He, however, fell before the Turks in 1453, and a few years after the fall of Constantinople the sultan conquered practically the whole of the land.

By the Turk Greece was divided, apart from the islands, into six sanjaks. His rule was arbitrary and at times brutal, but not consistently oppressive. Greece was obviously affected by the series of wars between the sultan and Venice. By 1570 the former had made his mastery complete, but after Lepanto the tide began to turn, and in 1699 the Morea was surrendered to the republic, but it was reconquered in 1715. The rise of the Russian power was the next external event that affected the fortunes of Greece, and this led at length to freedom from Turkish rule.

A. W. Holland

The history of Modern Greece begins with the war of Independence, one of the overflows of national sentiment caused by the French Revolution. It met with general sympathy in Europe. The insurgents were assisted by large loans; and the transference of the chief naval and military commands to British volunteers, Lord Dundonald and Sir Richard Church, helped to bring the long and fluctuating contest to an end. But it was only settled by the intervention of the Great Powers, Britain, France, and Russia, which first by diplomacy and then by arms assisted the Greeks to establish an independent state.

The Bavarian prince Otto was invited to become king of the Hellenes, but his despotic methods and the employment of Bavarians only in government offices soon made him disliked. The Greek politicians, kept out of office, turned their energies to stirring up trouble; in 1843 the king was forced to grant a constitution and to dismiss his Bavarian advisers. But he neither grew in popularity nor was he able to secure good government for the country, which needed above all things a period of rest. Instead it was plunged into political struggles, in which the Great Powers took sides.

British Intervention

Twice British warships were sent to threaten Piræus, the port of Athens; the first time to enforce payment of interest on a loan arranged in London; the second time to support the doubtful claims to compensation put forward by a certain Don Pacifico, a Portuguese who called himself a British subject. Again, during the Crimean War, when Greek sympathies flowed towards Russia, foreign warships were sent into Greek waters. This so intensified the unpopularity of the king that a few years later he was deposed, and the crown offered to the duke of Edinburgh. But Britain

had agreed with France and Russia that neither she nor they would put a prince upon the throne, so the Greeks had to look elsewhere. They found a German-Dane who in 1863 became king as George I.

At first he was warmly welcomed, the more so because Britain took the opportunity to please the Greeks by restoring to them the seven islands of the Ionian Sea which had for a number of years been under British influence. But the strife of parties which has always hindered the progress of modern Greece became more and more violent. The king was drawn into it. He was obliged to dismiss his principal adviser, a German, whom he had brought with him; and to agree to changes in the constitution which put the whole power of control into the hands of a single legislative chamber, and went further in the direction of democracy than any other state at that time.

Financial Difficulties

There was little difference between the parties which, headed by Tricoupis and Delyannis, followed one another in and out of office for many years. No great principles divided them, no measures of capital importance were in dispute. They played the political game for its own sake; not generally even for what they could get out of it, but for the satisfaction of their combative instincts and their desire to exercise authority. Whatever laws were passed by one side were usually repealed as soon as the other side regained power.

Their frequent reversion to this form of militarist fury brought them into financial difficulties; they could not pay the interest on their national debt, and in 1893 Tricoupis, worn out by incessant efforts to keep his countrymen on the path of economy and good sense, proposed to repudiate a large part of their liabilities. There was an uproar in Europe; the scheme had to be withdrawn.

Tricoupis soon resigned, and the withdrawal of his restraining hand was quickly seen. Agitation against the Turks on account of their treatment of Macedonians and Cretans was carried on by a secret society, and in 1897 war broke out. The Greeks were the aggressors and suffered bitterly for their folly.

The Turkish troops were everywhere and at once victorious. The Greek troops behaved badly, and the government was obliged to beg the Great Powers to mediate and save them from annihilation. The one good result of the war was the liberation of Crete from Turkey.

The only events which broke the monotony of political warfare for some time after this were the murder of Delyannis (1905) and a revising of the constitution (1911). But in 1912 came the Balkan War, in which Greece joined Serbia and Bulgaria against Turkey and wiped out the stain of humiliation that had rested upon the country since 1897. The troops fought well and deserved their successes, which brought an addition of some 16,000 sq. m. to Greek territory. Further gains were made at the expense of Bulgaria, against whom the Greeks turned their arms in 1913, with Serbia and Rumania, owing to quarrels over the partition of the Turkish spoils.

The outbreak of the Great War divided the Greek nation. Some hoped that Greece might be able to remain neutral. Others supported Venizelos, and were for taking the side of Britain, France, and Russia. In the end the latter prevailed, and King Constantine lost his throne in 1917, the Powers which had guaranteed Greek independence demanding his expulsion from the country. He was succeeded by his son Alexander, a young man of 24, who died in Oct., 1920.

Venizelos throughout the period 1917-20 was virtually dictator. Constantine returned in Dec., 1920, abdicated Sept., 1922, and died Jan. 11, 1923. Succeeded by his son George II, the latter was forced to leave the country at the end of 1923. Meantime the Turks made war on the Greeks in Asia Minor, where in 1921-22 the latter suffered defeats; the Turks captured Smyrna and drove the Greeks from Asia Minor. In Jan. 1924, Venizelos was back in Greece as premier. See *Salonica*; *N.V.*

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Greek Archipelago. Cluster of islands in the Aegean Sea (*q.v.*).

GREEK ART AND ARCHITECTURE

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Information complementary to that contained in the two following articles will be found under the headings Athens; Acropolis; Apollo; Architecture; Art; Roman Art; Sculpture; Theatre; the biographies of the great sculptors, Apelles; Phedias, etc., and the names of famous buildings, e.g. Erechtheum; Mausoleum; Parthenon.

See also Aegean Civilization: Mycenae; Troy, etc.

Discoveries at Mycenae revealed an art which, had it been shown to be that of the Heroic Age of which Homer sung, belonged properly to the Greek race, and was the earliest expression of its genius. They proved, however, to be only the first stage in the process by which the civilization of the Aegean in prehistoric times was brought to light and a continuous archaeological record established, dating from the neolithic age.

It became clear that Crete was in the earliest time the seat of a great power, doubtless the kingdom of Minos known to Greek tradition; and the palace of the rulers of Cnossus was the centre from which its artistic influence was carried far and wide in the Eastern Mediterranean. Hence we now speak of Minoan rather than Mycenaean art, since the importance of Mycenae is secondary and contemporary with the later phases of the development in Crete. But it is very questionable whether the artists of this period were in any sense Greeks; their pictographic script has not, it is true, been deciphered, but it seems unlikely that it was used to write the Greek tongue.

The art of the time produced masterpieces of decoration, and some remarkably naturalistic works such as the gold cups unearthed at Vaphio; but it lacks the sobriety and symmetry of true Greek art, and it seems best to suppose that Aegean civilization came to an end about 1000 B.C. owing to the invasion of waves of immigrants from the north, who founded the Greek race. The older art died out and left but doubtful traces in that which followed.

Early Greek Art

The earliest Greek art in the proper sense is represented for us almost entirely by pottery, at first adorned with geometrical patterns and a few rudely drawn figures, but later borrowing from Oriental models a wealth of plant and animal forms usually arranged in horizontal bands of decoration. Corinth and Chalcis in Greece proper were the main centres of production; Ionia, Rhodes, and Melos had their own styles. Ere long, subjects from myth and saga began to make their appearance, generally isolated scenes of combat or exploits of heroes.

Ionian art treats its material with greater breadth, expanding it so as to fill a frieze, and often disregards the unities of time and space; Doric art concentrates attention on a single motive and prefers the square field. Some remains of early metal work and painted sarcophagi from Ionia illustrate this, and the cedar-wood chest covered with carvings, which was dedicated at Olympia by the tyrant Cypselus (*q.v.*) of Corinth, seems to have combined both forms in one. The François vase, an Attic work of the early 6th century B.C., shows the handicraft of this time at its best. There is an artistic, as distinct from a literary, tradition in the handling of mythological subjects.

The Beginnings of Sculpture

To the same period belong the beginnings of Greek sculpture. This was at first religious; the earliest statues were those of the gods, the next those of their priests or worshippers, dedicated in temple-precincts. At first we have rude and shapeless images such as that of Apollo at Amyclae, a bronze column with head, hands, and feet attached; these rough-hewn pillars were called *Xoana*. But the progress made by the Greek artist in representing the human form was very rapid. For some time he obeyed the law of frontality which prescribes that the figure shall be symmetrical about a straight vertical line, and when this limitation was overcome, he continued to represent the most typical aspect of his subject, or even to combine typical aspects of its several parts, so that we have a full-faced body with the legs of a runner in profile.

The limits of strictly religious art were passed when athletes who won victories in the games were permitted to dedicate their statues. Hence came a powerful impulse to the study of the human form, and in due time to the reproduction of individual features, though true portrait sculpture begins at the earliest in the 5th century. Ancient writers tell of a mythical Daedalus as the founder of a school of sculptors; the names of many of his successors are historical, such as Archermus of Chios, Dipoenus and Scyllis of Crete, and Rhoeus and Theodorus, the inventors of casting in bronze.

As in early handicraft, so in sculpture, we find an Ionic school working largely in the Aegean islands and known to us from works dedicated at Delos, but also active at Athens; and on the other hand a Dorian school which worked in the Peloponnese—where Sparta was then still an art-centre—and in the western colonies.

Sculpture soon became associated with religious architecture, the continuous frieze above the column of the Greek temple and the "metopes," or square slabs filling what had been empty spaces between the beam-ends of wooden buildings, gave golden opportunities for work in high or low relief; the triangular pediment presented a fresh problem, which the Greek was not slow to solve. In an early attempt made in Athens, Heracles is shown wrestling with Triton.

The material was a soft, calcareous tufa, which was covered by a thick layer of paint—red, blue and green. This work belongs to the 6th century, during which the Peisistratid tyrants made Athens a great art-centre, attracting from both Ionia and the Peloponnese, especially the former, the best talent of the time.

Athenian Vase Painting

Other foci of artistic development were the sanctuaries of Delphi and Olympia, which rulers, states and individuals from E. and W. filled with their offerings; and the advance towards technical mastery had made great strides even before the Persian wars (490–479 B.C.), which raised the national consciousness of the Greek to the most intense pitch, and was followed by the attainment, within a few decades, of the highest artistic perfection. In particular, the Athenian vase-painters showed a marvellous fertility of imagination, combined with great delicacy in line-drawing and skill in adapting their compositions to a curved surface. Euphronius, Duris and Hieron are the most famous, but many of the finest vases are unsigned.

The severity of the earlier works of this time, such as the bronze charioteer dedicated at Delphi by a Syracusan prince or the pediment of the temple of Aphaia at Aegina soon gives way to the marvellous freedom of the discus-thrower of Myron. The so-called canon of Polyclitus represented the frame of the human athlete in its perfect type; and the sculptures of the Parthenon, though we cannot trace in them the hand of Pheidias himself, to whom was entrusted the general supervision of the decoration of the temple and the carving in gold and

ivory of the statue of Athena, of which a reduced copy was found at Athens, reveal both by design and execution a group of craftsmen of unsurpassed cunning.

Naturally much less is known of the painting of the same period in which Polygnotus was the most famous name; but we can perhaps form some idea of the style of his great frescoes of the fall of Troy and the under world, both at Delphi, from Athenian vase paintings. At Olympia, the great temple of Zeus, with its pediments, belongs to the earlier half of the 5th century; the statue of the god was the work of Pheidias, but we have no material for an adequate reconstruction of it.

Developments of the 4th Century

The great war which devastated Greece in the closing decades of the 5th century B.C., to some extent severed the intimate association of art with national life; it also affected the distribution of the national wealth, and led to a lowering of religious conceptions and of political standards. Thus in the 4th century we find in the finest works not so much an embodiment of ideals as a refinement of the artist's individual conception of beauty; moreover, the execution of the earlier period, masterly as it was, was surpassed by that of the great sculptors of the new time.

We possess an original by Praxiteles in the Hermes at Olympia in which the treatment of flesh and drapery, alike at once in its realism and its grace, is inimitable. We can only rely on copies for his more famous works—the Satyr and the Aphrodite of Cnidus; his contemporary Scopas, who excelled in the rendering of passion, must be judged by the heads from the pediment designed by him for a temple at Tegea in Arcadia.

The athletic school of Sicily produced its master in Lysippus, of whose Apoxyomenos (an athlete scraping himself with a strigil) there is a copy in the Vatican which is more slender in its scheme of proportions than the Canon of Polyclitus. Lysippus was also a master of portrait sculpture, which now at length, in the hands of Silanion and others, attained individual realism (a fine example is the portrait of Demosthenes, by Polyceutus). He was commissioned to reproduce the features of Alexander the Great, which we recognize in many works, including the head of a marble statue found at Cyrene after the Italian occupation of Cyrenaica in 1912. Alexander also employed the greatest of Greek painters, Apelles, who, with his rival Proto-

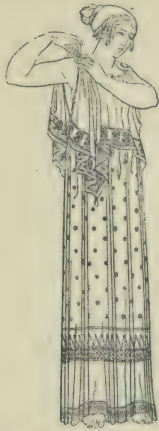
genes, succeeded to the places occupied at the beginning of the 4th century by Zeuxis and Parrhasius. These are, however, no more than names to us. The use of colour in connexion with sculpture is illustrated by the magnificent series of sarcophagi discovered at Sidon, one of which represents Alexander in battle and the chase.

In the Hellenistic age which followed the death of Alexander, art was affected by the changed social and political conditions. The monarchies which arose from the ruins of Alexander's empire, and such communities, e.g. Rhodes, as enjoyed a measure of freedom under their protection, enlisted the services of the greater artists for the erection and adornment of their public monuments. The famous Colossus of Rhodes, which fulfilled the function of a lighthouse, was the work of Chares, a pupil of Lysippus. The Victory of Samothrace, a colossal statue of the goddess standing on the prow of a ship, which is now in the Louvre, commemorated a naval victory won by Demetrius Poliorcetes in 306 B.C. The Fortune of Antioch, an early example of the personifications popular in this period, is represented by a statuette in the Vatican; it was the work of Euty-chides of Sicyon, another pupil of Lysippus.

Art in Pergamum

The kings of Pergamum were the chief patrons of art in the Hellenistic age. Their victories over the Gaulish invaders of the 3rd century B.C. were commemorated both by a series of life-sized statues and groups, some of which survive in originals and copies, the most famous being the Dying Gaul of the Capitoline Museum, Rome, and also by a number of smaller groups representing the combats of gods and giants, Athenians and Amazons, Athenians and Persians, and Pergamenes and Gauls, regarded as typical of the struggle between Greek and barbarian. The Apollo of the Belvedere, now in the Vatican, an antique copy of a bronze Greek original, assigned by some to the 4th century, perhaps rather commemorates the repulse of the Gauls from Delphi in 279 B.C.

Above all, the great altar erected on the Acropolis of Pergamum, probably by Eumenes II (197–169 B.C.) is decorated with a frieze in high relief depicting the battle of the gods and giants, in which a new art, distinguished by dramatic force and technical bravura, is brilliantly represented. A school of artists which flourished at Rhodes in the century preceding the Christian era has left us the



Greek female costume. Left to right : peplos or outer garment ; girl fastening the chiton over her shoulder with brooch or button ; basket-carrier at a festival, showing girdle and sandals ; girl in chiton and slippers donning the peplos



Priestesses pouring libations, showing various types of drapery and head-dress : a kalyptra or veil, kekryphalos or cap confining the hair, and stephané or crown. Right : lady in old-time costume seated



Greek youth in chlamys or short mantle, and wearing a pilos or close-fitting felt cap. Centre : a warrior in field dress. Right : a peasant wearing petasos or soft cap, and high boots

GREEK COSTUME AS RECORDED IN MURAL PAINTING AND SCULPTURE

From Costume of the Ancients, by Thomas Hope

group of Laocoon and his sons, with its exaggerated pathos. From Tralles in Asia Minor came Apollonius and Tauriscus, the sculptors of the Farnese bull at Naples, a group which represents the punishment of Dirce by Amphin and Zethus. The scientific research of the time left its trace in the Borghese fighter of Agasias, an Ephesian sculptor, which is interesting as an example of minute anatomical study.

Decorative Arts

Artists also catered for the tastes of the wealthy class which sprang up in the capitals and other great cities of the new monarchies. Painting and mosaic were employed in the decoration of private houses, especially at Alexandria, and the discoveries of Rome and Pompeii enable us to form some idea of the results. Alexandria was the chief, but not the only, home of Torcentic, or the art of the chaser of gold and silver, of whose work Roman plate gives us the best impression. The terra-cotta statuettes and groups found in tombs, especially those of Tanagra in Boeotia, are works of great charm and delicacy.

The growth of private luxury was also responsible for the popularity of genre subjects in sculpture, of which the best example is the Boy and Goose by Boethus, for the loss of religious significance in the representations of divinities, as in the instance of the Medici Venus and the Aphrodite in the Bath of Voedalsas, and the hybrid of painting and sculpture seen in the pictorial reliefs used in wall-decoration. Lastly, after the Roman conquest, we find a recurrence to early models in the Neo-Attic school of archaising artists.

H. Stuart-Jones

Bibliography. Principles of Greek Art, P. Gardner, 1914; Handbook of Greek Sculpture, E. A. Gardner, 1902-3; the Art of the Greeks, H. B. Walters, 1906; and History of Greek Art, F. B. Tarbell, 1896.

ARCHITECTURE. Before the 7th century B.C. the architecture of the peoples inhabiting the Greek peninsula and parts of the Asia Minor coast was too deeply impregnated with Persian, Egyptian, and Assyrian elements to be regarded as a distinctive style. The discoveries at Tyrins (Troy), Cnossus, Mycenae, and other places have revealed the existence of an elaborate architecture four or five centuries earlier than the beginnings of the real Greek civilization; but those buildings had little or nothing in common with the form or spirit of what is now understood by Greek architecture. It is only after the lapse of 400 years that the national archi-

tecture begins to emerge. Even then, its massiveness and bold proportions are suggestive of Egypt rather than Greece, and it is not until the 5th century B.C. that this massiveness is refined into the combined stability and grace of Doric building.

The main principle governing Greek building was ordered symmetry combined with picturesqueness of effect. Individually, the Greek temple, fully developed, is an oblong structure enclosed by a row of columns. In its earliest form it was a small square apartment in which the image of a particular deity was placed, with a porch formed of two flanking piers, and two columns between them, on its front. The next step was to separate the apartment, or cella, from its porch by a screen with a doorway. The porch was then further developed by the addition of an outside screen of four columns, which number was subsequently increased to six, so as to enable the two at the extremities to outflank the actual front and form a starting-point for a range of columns carried round the remainder of the building. Thus was evolved the hexastyle temple, which is the typical form of the mature Greek temple enclosed in its envelope of columns. The Parthenon itself is exceptional in that it had a hexastyle portico at each end of the cella, and, outside, a further portico which was octastyle (eight-columned); but the hexastyle type is the prevailing one.

Grouping of Buildings

The building consisted of a single storey with a low-pitched roof ending in a pediment. Height was not aimed at, nor is there any great variety of outline. On the other hand, these buildings were grouped so as to secure the maximum effect of picturesqueness. No two of those which once crowned the Acropolis were placed in line with each other. They were set at various angles, conforming to the rise and fall of the ground, from which they appeared, spontaneously and naturally, to grow.

Moreover, the Greek temple, regularly outlined, exquisitely though not mathematically proportioned as it was, did not rely wholly on its form. The architectural ornament of its exterior was decked out in bright primary colours, sometimes gilded; marble was often covered with coloured stucco, and sculpture was painted, until the whole must have sparkled with points of colour in the sun.

Greek architecture was dominated at successive periods by three Orders, of which the first

and best beloved was the Doric. In Athens, one of the best preserved buildings of this Order is the so-called Temple of Theseus. Excavations carried out at Olympia in 1876 laid bare the foundations and plan of a great Doric temple of Zeus, and of others, while many similar structures have been unearthed in Crete and the islands of the Archipelago, the western coast of Asia Minor, and in Sicily and the toe of Italy, where Greek colonies existed.

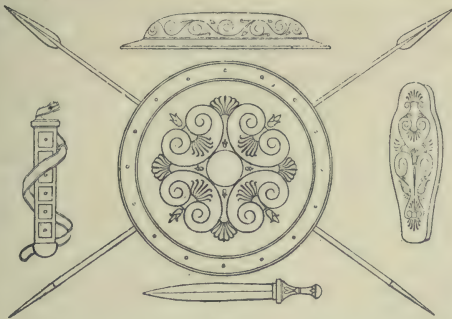
The evolution of the Ionic Order is less easy to trace than the Doric. The volute capitals, which are its distinguishing feature, appear to have originated in Asia, and there are no known examples in Greece itself earlier than the 5th century. The Erechtheum, on the Acropolis, the greatest of all Ionic temples, was built about 420 B.C. In Asia Minor, however, Ionic temples existed before the Persian Wars.

Just as the use of the Doric Order reached its climax of splendour a few years after the building of the Parthenon (447 B.C.), so the maturity of the Ionic followed the Erechtheum within the space of a few years, as if, in each case, the production of a great example was needed to give the impetus to the development of the style. Doric had satisfied the early aspirations of the Greek builders to comeliness of form and fine proportions, but denied them the greater freedom of purely architectural ornament which they desired.

The Ionic Order gave them a new opportunity. The Ionic volute, in its original form, had a two-sided capital. This was found unsatisfactory at the corners of buildings where the capitals had to show their ends, while those next to them showed their broadsides and volutes. A new corner capital was accordingly invented which, by a slight modification of the volutes, was transformed into a four-sided capital, thus enabling the continuity in the whole line of capitals on a front to be preserved. This order also admitted more than one treatment of the bases of columns, and variety in the treatment of the entablature.

The Corinthian Order

The Corinthian Order, the latest of the three employed by the Greeks, was not introduced much earlier than the age of Alexander the Great. Its foliated capital appears to have been borrowed from the bell-shaped capital of the ancient Egyptians, though the acanthus leaf ornament with which the Greeks covered it was practically their own device. A little circular



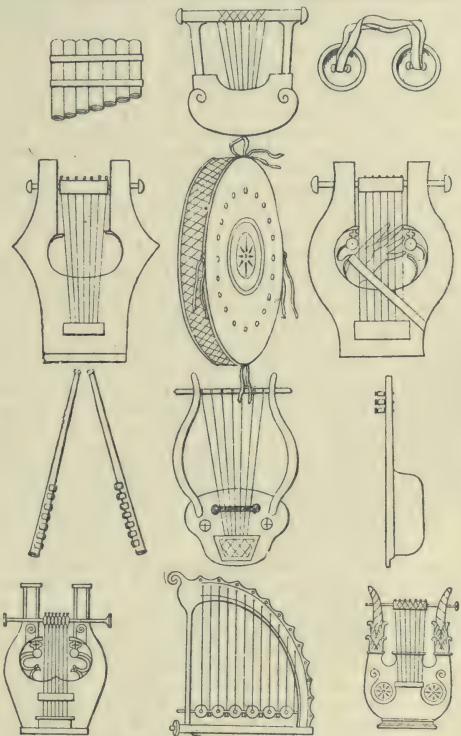
Arms and armour : shield (front and side) and spears, sword and scabbard, and, right, a pair of greaves



Domestic utensils : a basket, standard and hanging lamps, tripod table, and, above, a handled patera for libations



Pottery vessels: five amphorae (two-handled vases); top, left, a wine-jug; two hand-lamps, and, below each hand-lamp, a stemmed drinking cup



Musical instruments: syrinx or pipes, lyres and citharae, crotalon or castanets, tympanum or tambourine, and tibiae or flutes



Fictile vases: amphora embellished with graceful Bacchanalians, entwined swan-headed handles and vine-wreathed neck, and other water-jugs and wine-jugs painted with bulls' heads, human figures, and conventional designs

GREEK ART: BEAUTY OF DESIGN STILL UNSURPASSED APPLIED TO ARTICLES IN COMMON USE

building at Athens, known as the Choragic Monument of Lysicrates, is accredited as the best example of this order on Grecian soil; it was erected about 334 B.C. But the style was never fully developed in Greece, and its manifestations are chiefly found in the architecture of the decadence; it is rather a feature of Roman architecture than of Greek.

Of Greek municipal buildings very few traces remain, but in the time of Pericles (5th century) the Agora, or market place, of Athens had its porticoes and colonnades enriched with painting and sculpture in a manner befitting the great industrial centre of the city. Domestic architecture retained the Oriental type, squat and bare on the outside, with roofs sloping to the courtyard, presenting no features of architectural interest. The Greeks were not tomb-builders, and nothing of importance in this class of architecture can be chronicled.

The theatres were built on a scale surpassing that of all other public buildings, both in Greece itself and in Asia Minor; the theatre at Dionysus was no less than 443 ft. in diameter; but the proscenium of those great masses of masonry were the only points treated architecturally, and none of them have survived.

F. J. Maclean

Bibliography. L'Architecture grecque, V. Laloux, 1888; Die Baukunst der Griechen, J. Durrn, 1880; The Architecture of Greece and Rome, W. J. Anderson and R. P. Spiers, 1907; Greek Architecture, E. A. Browne, 1909.

Greek Church. Name given to the Eastern or Oriental Church, the full title of which is The Holy Orthodox Catholic Oriental Church. The name Greek is given to this Church because it was Greek in origin, and most of its ecclesiastical liturgies and literature were composed in that language. The Greek Church is to-day the third largest section of Christendom, having some 100,000,000 members as against 230,000,000 Roman Catholics and 140,000,000 Protestants. By far the greatest number of its members (no fewer than 85,000,000) belong to Russia, the remainder being scattered about Turkey, Greece, Serbia, Rumania, Bulgaria, Egypt, and W. Asia.

In primitive times the Eastern and Western divisions of Christendom formed a single Church, and it was only gradually that the separation took place. Many causes contributed to this result. When Constantine transferred the capital of the empire from Rome to Constantinople, it was inevitable that

the Roman empire would split into two divisions, and that the political rivalry between these two divisions would be reflected in the Church.

It soon also became clear that the genius of the East differed from that of the West. The East was more interested in the speculative problems of theology, the West in form and organization. The spirit of the East finds its best expression in the writings of Origen and the Alexandrian fathers; the spirit of the West in those of Augustine. To the East we owe the metaphysical side of Christian theology, especially in Christology; to the West the doctrines of sin, grace, and predestination. For some centuries the two Churches gradually drifted apart, but it was not until the 9th century that the final rupture took place. The actual occasion for the division was a controversy upon the Filioque clause in the Nicene creed.

Points of Difference

In addition to the theological difference, there were several outstanding points upon which the two Churches diverged: (1) the Eastern Church maintained the absolute equality of the different patriarchates and refused to acknowledge the supremacy of the pope of Rome. (2) The Eastern Church refused to adopt the rule of celibacy for the mass of its clergy, and allowed all except the bishops and monks to marry. (3) The Eastern Church always maintained communion "in both kinds," and refused to consent to the Roman practice of withholding the cup from the laity. (4) It also insisted on "trine immersion" in baptism. (5) It allowed the use of the vernacular in its liturgies and public worship. (6) The Eastern Church does not accept the Apostles' or the Athanasian creed, both of which are of Western origin; but regards the Nicene creed without the Filioque clause as the basis of its faith.

As a result of its belief in the equality of the patriarchates the different national sections of the Eastern Church maintain a considerable amount of independence. The orthodox Church of Russia was formerly subject to the patriarch of Constantinople, but as it grew in importance and numbers a separate patriarchate was established at Moscow in 1582, and in 1721 a holy synod was established at St. Petersburg whose jurisdiction extended across two continents. The national Church of Greece also secured its independence in 1833, and has a synod of its own. Serbia, Rumania, and Montenegro also have their own synods and metropolitans, and are no longer under

the control of the patriarch of Constantinople.

Various attempts have been made at different times to bring about a reunion between the Eastern Church and the Churches of the West. At the councils of Lyons, 1274, and of Ferrara, 1439, fruitless efforts were initiated to heal the breach. A compromise might have been found on the theological difficulty, but the papacy presented an insurmountable barrier. Overtures have also been made at different times by the Lutheran Church, but the difficulties have always proved intractable. There have been pourparlers on more than one occasion between the Greek and the Anglican Churches, hitherto with no tangible result. At the world conference of the Churches on Faith and Order, held in Geneva, in Aug., 1920, representatives of the Greek Church were present in considerable force, and formally proposed, on behalf of the Greek Church as a whole, the establishment of a League of Churches parallel to the League of Nations.

H. T. Andrews

Greek Fire. Inflammable composition used by the Byzantine Greeks for defensive warfare. According to many accounts it was inextinguishable and was able to burn under water. Its invention is ascribed to Callinicus of Heliopolis in A.D. 668. The composition of Greek fire is a matter of uncertainty. Aeneas Tacticus gives it as a mixture of sulphur, pitch, charcoal, incense and tow, while Vegetius adds naphtha.

It was used against the enemy in various forms, the simplest being a tube packed full of the composition and thrown like the modern grenade. It was often blown through copper tubes, fixed in the prow of the vessel. These tubes were shaped like the mouths of savage monsters, so seeming, to the terrified enemy, to be vomiting streams of liquid fire. There is hardly much doubt that gunpowder, or some composition very like it, was also used to hurl missiles of Greek fire compositions which exploded when they hit their object, thus coming very near the modern gun.

The secret of Greek fire was well kept, and the terror it inspired, apart from its devastating effects, prevented the capture of Constantinople for many centuries. The use of various forms of Greek fire was continued till the 14th century when gunpowder took its place. See Explosives; consult also History of Inventions, Beckmann, 1846; Gibbon's Decline and Fall of the Roman Empire, vi, ed. J. B. Bury, 1912.

GREEK LANGUAGE AND LITERATURE

J. S. Phillimore, LL.D., Prof. of Humanity, Glasgow, and J. H. Freese

This article is supplemented by articles on the Greek writers, e.g. Hesiod and Homer; the dramatists, e.g. Aristophanes, Euripides, and Sophocles; Thucydides, and other historians. See Acting; Drama; Theatre; also Alphabet

Greek is a member of the Indo-European family of languages. The view that there existed a special affinity between Greek and the Italic languages, due to an original Greco-Italian language, is no longer held. The common primitive language of the Greek stocks is unknown; the Homeric poems, the earliest existing record, exhibit forms belonging to various times and different idioms. According to the ancient Greeks themselves, Greek once contained three (four) distinct dialects—Doric, Aeolic, (Attic) Ionic, named after Dorus, Aeolus, and Ion, the three legendary ancestors of the Hellenic race.

Modern philologists are content with two main divisions: Ionic and non-Ionic, the former including the language of Homer, the new-Ionic of Herodotus, and Attic (Athens), the latter Doric (Sparta, Corinth), Aeolic (Boeotia), and Achaean (northern Greece). At the end of the 6th century B.C. a dialect of the Ionic group, that of Athens, whose political, social, and industrial superiority had raised her to the position of the metropolis of Hellas, asserted and maintained its supremacy over the rest.

The history of the Greek language may be roughly divided into the following periods: Attic (500–300 B.C.); Hellenistic (300 B.C.–A.D. 600); Byzantine (600–1453); modern (1453 to the present day). After the subjection of Greece to the rule of Macedonia, Attic became the popular language at the Macedonian court. The conquests of Alexander in Egypt and the East, the substitution of Alexandria for Athens as the centre of learning and civilization, and the foundation of new Hellenic communities, led to its adoption as the general means of communication.

The result was the formation of a dialect called Hellenistic or Koine, universal or common Greek, as distinguished from the pure Attic. The term Hellenistic was formerly limited to the language of Greek-speaking foreigners, especially Jews, and was used with special reference to biblical Greek, but is now generally understood to mean the language spoken from the time of Alexander the Great to the establishment of the Byzantine or Eastern empire. Many specimens, in colloquial style but of no particular literary interest, have been found in Egypt. The incorporation

of Greece in the Roman Empire did not lead to the absorption of Greek by Latin; in fact, as Horace says, "the conquered took captive the conqueror." Many Latin words, however, especially official, were introduced. The military character of Roman rule checked literary initiative, and left scope for the development of the colloquial idiom.

Comneni (1050–1200) to revive the classical language have their parallel in those of the purists of modern Greece. The subjection of the country by the Turks had but little effect. It was chiefly seen in words relating to food and dress, and terms of abuse.

Similarly, French (chiefly referable to the Frankish empire at Constantinople, 1204) and Italian (owing to commerce with Venice) contributed to the vocabulary. But with all this the modern language cannot be called a mixed language; it is the natural analytical development of Hellenistic, a direct survival of classical Attic, though impoverished, corrupted, and modernised.

Ancient Greek was one of the most highly inflected languages of the Indo-European group. Its euphonic vowel system, the softness of its consonantal combinations, the richness of the inflexional forms, especially in the verb, its adaptability to the formation of compounds, rendered it highly suitable for rendering abstruse and scientific terms. A glance at any technical work, or indeed at the columns of a newspaper, will show how much English is indebted in this connexion to the language of ancient Greece; e.g. aeroplane, gramophone, cinematograph, telegram, telephone.

LITERATURE. The temporal range of Greek literature is enormously long. No fewer than 2,300 years divide Homer from the Turkish capture of Constantinople; and yet Homer is evidently the mature product of a high culture which had generations of primitive poetry behind it; and the Byzantine prolongation of the literature was still alive in 1453. Though not for all this time giving form to the highest and largest achievements of the human mind, Greece never, even in her decline, fell below the capacity to furnish at least an articulate chronicle of events.

Such useful longevity is only possible in languages which overflow racial and national limits, lending themselves to relays of peoples for their vehicle of thought and, thereby, part of their civilization: it is purchased at the sacrifice of idiomatic refinement. So the aesthetic beauty of the literature certainly declines as from the time when Alexander's conquests hybridised Greece. Indeed, it has been said that, whereas Greek prior to that date is unique, thereafter it became merely a literature like another. But it retained its workaday faculty of expressiveness, and was able to expand enough, after

Capitals	Minus-cules	Greek Names	English	Modern Greek
A	α	Alpha	a	a
B	β	Beta	b	v
Γ	γ	Gamma	g	gh,y
Δ	δ	Delta	d	th (in that)
E	ε	Epsilon	e	e (in let)
Z	ζ	Zeta	z	z
H	η	Eta	ee	ee
Θ	θ	Theta	th	th (in thin) (in thin)
I	ι	Iota	i	i
K	κ	Kappa	k	k
Λ	λ	Lambda	l	l
M	μ	Mu	m	m
N	ν	Nu	n	n
Ξ	ξ	Xi	x	x
O	ο	Omicron	o	o (in not) (in not)
Π	π	Pi	p	p
Ρ	ρ	Rho	r	r
Σ	σ	Sigma	s	s
5 (Anat)				
T	τ	Tau	t	t
Υ	υ	Upsilon	u	u
Φ	φ	Phi	ph	ph
Χ	χ	Chi	ch	ch
Ψ	ψ	Psi	ps	ps
Ω	ω	Omega	o	o (in note) (in note)

The signs ' represent the hard (as in hat) and smooth breathings, the latter merely denoting a catch in the breath. Neither has any value in modern Greek. Three older letters, Ϝ, the digamma, having the sound of v or w; Ϟ, the hard k; and Ϛ representing s, were dropped as being of no further use, although they were retained as numerals.

Greek Alphabet as finally adopted in 403 B.C.

The conversion of Rome to Christianity and the removal of the capital to Byzantium (Constantinople) had far-reaching effects. The classical spirit gave way to new ideas; during this period the name Greeks, as savouring of paganism, was replaced by Romæi (Romans). But the language itself was saved by the church; the fathers studied it and wrote in it, and in fact all written compositions were modelled on classical Attic. The efforts of the

many foreign intakes, to accommodate the quite new mind of Christianity.

A literary language is formed by one of a number of dialects establishing itself as supreme over competitors. The most expressive wins, but the power of expression is only then put to the proof when men of genius arise to make the inspiring demand upon its possibilities. As Latin among the ancient, as Tuscan among the medieval Italian dialects, so Ionic took the lead among the Greek, because Homer was an Ionian. But the great formative authors—a Dante or a Homer—borrow freely from other dialects; and the language, which eventually establishes itself as central, as the mother tongue, prevails by absorption as well as by exclusion. Both these ways of selection belong to its vigour. The language of Homer's *Iliad* and *Odyssey*, as well as that of Hesiod's *Works and Days*, has a strain of Aeolic in it.

Ionic and Attic

Ionic, once hallmarked by Homer, was further assured of primacy by Archilochus (7th century B.C.), a writer whom ancient criticism regularly esteemed as next only to him in greatness. And through the intermediate stage of Old Attic, Ionic emerges into the eventual Attic which is in perfection during the period between Pericles and Alexander. Thanks to the genius of Pindar, Doric maintains itself in Lyric during the 5th century; but after that time the mediums for composition are Attic, for prose; and for poetry, an artificial decorative diction.

Attic is the most Greek of Greek, and much that is commonly called Greek is distinctively Attic. The greatest legacy which Attic literature bequeathed to the world was not the masterpieces of beauty, crowded thick into two intense centuries (from Aeschylus to Menander is only three lifetimes), but language perfected as a reasoning instrument. The essence of Attic is that art and science (which in a romantic view are enemies) here are sisters: beauty and truth, two names for one ideal; writing, just the best of talk immortalised, having shed the triviality, but kept the ease. Attic may be said to culminate in Plato.

But the qualities to which Attic alone gave an intellectual determination are not absent from the literature of the other dialects. Sappho, whose reputation would probably suffer if her complete works were recovered, Alcaeus and Alcanan all have the sharpness of touch which goes with high sensibility. The beauty of good Greek

is naked beauty, a grace of speech like the grace of proportion in a human body. These talents are there, but only devoted to the concerns of passion and of fancy; Athens applied them to discovery and reasoning.

The Greeks were unrivalled in inventiveness; they left no literary form undiscovered, if we except such an essentially informal composition as the Latin *Satura*, which had no unity about it but the author's personality. Yet even here the Roman claim of originality is doubtful. Forms have developed and shifted; what existed only in miniature for them has been executed on a great scale by moderns (e.g. the psychological narrative or novel of character). But it is almost literally true to say that one cannot point to any kind of modern book from which it shall not be possible to ascend by a legitimate strain of pedigree to a Greek ancestry. Thus Greek is the perfect field in which to study the curious laws (sketched by Brunetière and Ouvre, but not yet fully expounded) of the Development of Forms in Literature.

We find certain forms corresponding to certain political epochs. Wares must have a market. The proper audience must exist. Homeric epic presupposes an aristocracy in whom the tradition of heroic chivalry and patriarchal polity still survives, at an interval sufficient to suffuse historical outlines with legend. Drama requires much intensity of city life for its atmosphere; it results from an increasing pressure from prose, i.e. poetry modifies itself into this form in order to keep a hold on the strictly intellectual purposes which prose expressly exists for—to prove and to persuade. For tragedy is poetical casuistry.

Athenian Comedy

The development of oratory belongs, of course, to democracy, a condition when men need to go armed in tongue and wit for their safety. The New Comedy of Manners is the entertainment of a cultivated bourgeoisie, living securely and serenely in a homogeneous society: the product of an Athens which has retired from being a great state. Greek genius never invented a more catholic form; it could be acclimatised anywhere.

Just when the literature of independence had evolved its complete round of manifestations, Macedonian imperialism provided the royal courts of Seleucia, Pergamum, and (pre-eminently) Alexandria, to foster all that range of productions for which democracy

has no use: the Callimachean and Theocritean schools of verse, the methodic curiosities of science, and the patient pieties of disinterested inquiry, to which mankind owes most of its knowledge of the past.

At every stage in a history which is motley with local diversities (Hellas, though small in area, having many centres or compartments) and violently accidented with revolution (for they were a morally unstable people), the Greek genius rose to the challenge of creating the literary monument proper to that occasion. As their political philosophy traced a necessary cycle of politics from monarchy through aristocracy—plutocracy—democracy, to autocracy, so did they actually exemplify the normal successions of literature.

The Transformation of Homer

The forms continue duly to ramify and recombine themselves till every spark of vitality was worked out, e.g. when epic becomes impossible (because with increasing refinement of detail, no man's imagination can execute the line of beauty on the colossal scale), every element of epic yet persists, but transformed. The emotion of a Homeric battlepiece now vents itself in a chorus or a rhesus of tragedy, i.e. the stock is continued by a cross with lyric in that case, and rhetoric in this. Similarly, the Homeric *Aristeia* takes new life as the Epinikian ode. Selected out of the general fabric of tradition, those stories in which the law of destiny and retribution is written in letters of blood and fire, are now enhanced to their full significance; and what has been a few lines of detail in Homer becomes for Aeschylus the Oresteian trilogy.

Here was a certain peculiar quality of events when a superhuman power or scheme or law cuts into the quick of human affairs, to stultify pride; it was latent in the poetical mass. Greek genius elicits it, gives it full relief, appropriates the Dionysiac mummeries as pulpit or stage to manifest it, and names it once for all *tragic*. The same principle may be traced in other successions; of the hymn, older than Homer, and now too exhausted to tempt ambition any more, there yet survives something able by alliance with epinikian and rhetoric, to give birth first to the patriotic rhetoric of Herodotus' *Chronicles*, and later to Isocrates' *Panegyric*.

Tragedy itself has worked out its possibilities with Euripides, but it died only to come to life again in New comedy. Even the peculiar, inimitable Attic product, the Old comedy, left descendants in satire

and lampoon. With the Greeks no mood was ever at a loss for means of expression. The typical experience of Greece has at least taught us a few principles; such as, that great lyric and great oratory do not belong to the same age (since they are alternative modes); and that in times of great scientific discovery poetry will be mainly decorative.

The Growth of Prose

What marks the definite triumph of the Ionian in the competition for intellectual headship and spokesmanship of Greece, is the institution of prose. Poetry had attained to a very high range of facility, and had successfully discharged the functions of pleading and arguing besides its peculiar birthright of expressing mood, impulse, and the pride of life, while as yet nobody ventured the idea that language could be artistically beautiful and yet released from metre; release from a discipline or a constraint is how the Greek conceived this momentous revolution, the development of prose.

The discoverers of the Iambic had given to versified thought the lightest, easiest, most unaffected uniform that it could wear until the stern convention of artistic dignity was broken. But there came a moment when thought rebelled. It was as though some Chinese decree which ordained dancing as the only ceremonial mode of progression, were abrogated in favour of walking. The motive was the scientific curiosity which characterises the Ionian mind: it was Ionian philosophers and historians who made a new intellectual instrument out of unmetrical language, a medium hitherto reserved at best for annals, registers, etc., which might form the materials of history, and for the informal sayings and conversations of sages who professed no systematic theory.

Prose does not appear until the 6th century B.C., a round hundred years after Archilochus; and it does not impose itself at once as necessary in philosophy. Xenophanes (born c. 580), and long after him, Parmenides (c. 520) and Empedocles (c. 484), wrote in verse. But all the historians, from Cadmus and Pherecydes onward, used the new medium.

During the greatest period (the 5th century B.C.), as is usual at high points of civilization, we find Greek poetry and prose closely approximating. The reconciling force was rhetoric, i.e. the study of style. The systematic analysis of language was begun in Sicily by Corax and Teisias; but the first great masters

of self-conscious prose are Gorgias, Thrasymachus, Antiphon, and the other Sophists. They developed the effectiveness of language for argument and appeal by principles which are of fundamental validity. Earliest professors of dialectic and literature, under their influence the dividing line between prose and verse was narrowed down to actual metre; prose even assumed the emotional rhythm; and verse (dramatic) was refined away from the pomp of Aeschylus to the discreet pliancy of Sophocles; and this approximation continued as long and in so far as poetry continued to be a form of action at all, i.e. concerned with proving or persuading. A great prose writer like Thucydides has a poetical imagination; a great poet like Euripides has a scientific intellect.

But a century later and the two diverge again: poetry, now made wholly to please, "dresses up" without regard to common usage. Prose, devoted to science, in the hands of Aristotle's school, becomes almost as exact and dispassioned an instrument as algebra. Indeed, there is no modern science which might not conveniently use Greek as a language, adequate to all its requirements in facility and accuracy. From the 4th century B.C. onward prose prevails: no books that deeply changed anybody's mind were written in verse henceforth.

The Koiné Dialektos

But after the loss of Athenian independence there is both a general decline in creative power and also a disestablishment of Attic from its position of dominance. The new capitals form new local centres, of which Alexandria is the chief. To correct this artistic decentralization, natural necessity evoked a new *Lingua Franca*, the *Koiné Dialektos*, a federative language, as though English, American, and Pidgin-English were to coalesce nowadays.

It was cheap Greek, preserving somewhat of the readiness and frugality of Attic as an instrument, but more or less discoloured by contact with non-Hellenic on the fringes of the Mediterranean world; Greek written by and for Jews, Egyptians, Syrians, Italians, etc. Undistinguished rather than degraded, it offered the prose-artist no adequate means of refined craftsmanship. It was a medium out of which hardly anything but religious inspiration could make style.

Consequently, though serious writers, such as Polybius, Plutarch, Marcus Aurelius, used this ordinary Greek as it came to their

hand, Latinisms, barbarisms, neologisms, and all, without nicety, and never found themselves cramped for expression, more conscious stylists began as early as the 1st century A.D. to write a literary Greek, studiously learned from classical models, for their ornamental purposes. There were several waves of such Atticism, conscious renaissances of an obsolete fashion worked by academic aristocracies; the most famous is that to which Dion of Prusa (c. A.D. 40-117), Lucian (c. A.D. 125-185), a Syrian, and the Philostrati (c. A.D. 150-250) belong. The Atticist renaissances, and likewise all the poetry produced after the downfall of Athenian liberty, addressed themselves to learned coteries, not to the general average of an intelligent bourgeoisie as before.

Literature, it has been said, became now a chamber concert for virtuosi. Thus there is a regular barrier between, on the one hand, the poetry of Callimachus, Euphorion, the Anthology Little Masters, or the prose of Lucian and Alciphron; and on the other, the New Testament (on its literary side) and the popular propagandism of such sects as Cynicism.

In the Greek Romances we have a singular phenomenon: an essentially un-Attic, only half Hellenic thing, neglected all through the classical period, and finally taken up into polite literature in the period of Atticist renaissance. These stories, coming so late as they did, and so evidently creatures begotten in senility, have yet exercised a far greater influence on later literatures than any other product of the Greek genius after Plutarch. The poem of Nonnus (*Dionysiaca* in 48 books), produced more than 1,200 years after Homer in the Homeric convention of diction, is an extraordinary literary fact. Here, far down the centuries, was a Syrian in Egypt, inditing an epic which is despised only because the past brilliance of Greece obscures it.

Procopius and S. Romanos

A sort of final spasm takes place in the epoch of Justinian when Procopius in history, and Palladas in epigram, show themselves competent still to employ intelligently the literary machineries of 1,000 years earlier; and at the same period the Eastern Church astonishes us by breaking out into a Christian lyricism. S. Romanos (b. c. A.D. 500) is an original poet, 1,000 years after Pindar; and from the fountain which he struck out, a stream runs far into the Middle Ages, and by devious channels eventually finds its way

into the West, where once more the traditional fertilising power of Greek influence on Latin minds is exemplified.

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Greek Law. Term generally applied in a restricted sense to the judicial procedure of the Greek states, virtually to that of Athens, the only city, with the exception of Gortyna (*g.v.*) in Crete, of which a detailed account exists.

At Athens there were various officials who exercised different functions in the settlement of civil and criminal cases. Thus, of the nine archons, the eponymus had the supervision of family disputes, the basileus of religious, especially murder questions, the polemarchus of disputes between resident aliens and foreigners. The court of Areopagus or the 51 ephetae, who sat in different cohorts according to the nature of the case, tried cases of wilful murder, homicide, and arson.

The Forty, four to each tribe, resembled the English magistrates in petty sessions. They went round the demes, settling unimportant private cases in which the sum involved was less than 10 drachmae (about 8s. 6d.). Otherwise, the matter was handed on by them to one of the *diaetae* or arbitrators, who formed a sort of court of first instance. If his decision was rejected, he impounded and sealed up all documents and evidence to be reproduced at the regular trial before the *heliastae* or dicasts, the equivalents of the modern jury, by whom most cases, both civil and criminal, were tried in later times. The dicastae were 6,000 in number, 600 from each tribe, and had to be over 30 years of age. The actual number of jurymen, chosen by lot, varied from 201 to 2,501, the odd figure being obviously intended to

prevent the number of votes from being equal.

Public and Private Actions

Actions were distinguished as public (*graphē*) or private (*dikē*), although they frequently ran into one another, *dikē* being used to include both. When the state was directly or indirectly affected, this constituted ground for a public action. Such an action could be brought by any full citizen, except in murder cases, where the nearest relatives were obliged to prosecute, but if he failed to secure one-fifth of the votes, he was fined 1,000 drachmae (about £40) and sometimes in civil cases he had to pay the defendant one-sixth of his claim. Private suits had to be brought by the person directly affected.

The process went through three stages. The plaintiff summoned the defendant to appear on a certain day before the magistrate who was to preside. The plaintiff handed a written statement of the charge and of the declarations of the witnesses to the magistrate, who decided whether there was a case. Both parties deposited fees (*prytaneia*), which went to the successful litigant. If the defendant failed to appear, judgement went against him by default.

The next step was the preliminary examination (*anakrisis*). At this the defendant could put in a counter-claim or a plea that, even if the charge made were true, there was some informality which relieved him of the obligation to meet the charge directly. If no such plea was put forward or was rejected by the magistrate, the case was ordered to proceed.

The dicasts, chosen by lot by the officials called *thesmothetae*, assembled in their special court, the *Heliaea*, the same magistrate presiding. Both plaintiff and defendant delivered speeches on their own behalf, but they were allowed to have advocates to assist them, and their speeches were often written by persons who made a special business of it. The length of time allowed for each speech was measured by the clepsydra or water-clock. The verdict was given by ballot, bronze voting tablets being used, whole for acquittal, pierced in the centre for condemnation. For acquittal it was necessary that the votes should be equal. There was no appeal from the verdict, but a new trial could be demanded if it transpired that the witnesses had committed perjury.

Penalties consisted of capital punishment, inflicted by hurling the condemned into a deep pit near

Athens, or by administering hemlock to him in prison; banishment; *atimia* or loss of the privileges of citizenship; confiscation of property; and fines. The execution of the sentence was carried out by various officials, that of death by a body called the Eleven.

Such a method of legal procedure was highly unsatisfactory. The dicasts had no judge's summing up to influence their verdict; they were not responsible like the regular magistrates, who had to give an account (*euthyna*) of their term of office; all kinds of appeals *ad misericordiam* were made by the litigants, such as bringing in their wives and children dressed in rags. The emoluments appealed to the ordinary citizen, who was able to live on them without doing any other work.

J. H. FREESE

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Greek Letter Society. Name given to the secret fraternity of students found in most American universities. It takes its name from the initials of the Greek words adopted as a motto, and these, with their "grips" and rituals, are the only secrets of these societies. A. Δ. Φ. (1832), Ψ. Τ. (1833), and Δ. Κ. Ε. (1844) are perhaps the best known, but there are more than fifty, each with a chapter of from 20 to 30 members in many different institutions. The richer chapters have fraternity houses, in which the members live.

Fraternities have been condemned as undemocratic and encouraging cliques and extravagance, laws against them having been actually passed in certain states; but their numbers and property make them important.

The oldest Greek letter society, Φ. Β. Κ. (initials of the motto, *philosophia bioi kubernētēs*, philosophy the guide of life), was founded in 1776 at the College of William and Mary, Williamsburg, Virginia. Suspended in 1781 through the successive occupation of Williamsburg by the British, French, and American armies, it survived in the chapters it had established at Harvard and Yale. It has now dropped its social for academic activities, and admission to it is recognized as a true literary distinction. Women undergraduates have founded their own Greek letter societies or "Sororities," and the idea has been extended to the professions.

Greek Religion. Greek religion is not the same as Greek mythology. The latter is an account of the words and deeds of the superhuman beings called gods; the former is concerned with the nature and functions of these beings, and the worship and ritual by which they were approached.

There is no doubt that the religion of the Greeks, as it appears in the Homeric poems, was preceded by an earlier religion. It has been established that an earlier civilization, to which the name Aegean or Minoan has been given, preceded that of the Greeks. The Greeks themselves are the result of the blending of earlier inhabitants, neither Indo-European nor Semitic, with invaders who descended from central Europe, the last of these being the Dorians. How far Greek religion is an admixture of the beliefs of the original inhabitants with those of the Indo-European invaders; whether the Greeks ever worshipped stones, trees, plants, and animals; what part foreign influences, Asiatic and especially Egyptian, played in the formation of Greek religion as first known to us, are still unsettled questions.

Greek religion was originally neither monotheistic nor merely symbolical of a mystic system brought from the East. Nor was it purely a nature-religion, as was argued from the fact that comparative philology had shown that many of the old Vedic deities, who bore similar names to those of the Greek gods, were personifications of nature. Similarity of name does not necessarily imply a similar conception of the nature of the god. Thus, one who in the Greek hierarchy holds high, even the highest, rank may be insignificant in another.

The Greater and Lesser Gods

Greek religion was essentially anthropomorphic. The gods were conceived of as immortal, possessing the forms of men, their virtues and virtues, but infinitely superior in power and influence. They may be divided into (1) the gods of the sky, whose home was on Mt. Olympus, ruled by Zeus; (2) the gods of the seas and rivers, ruled by Poseidon; (3) the chthonian gods, or gods of the underworld, ruled by Hades. With these greater gods were associated numerous inferior deities. As the individual gods differed in power and wisdom, so they enjoyed different degrees of veneration in different states. New epithets from time to time indicated altered and extended functions.

The Greek believed himself to be surrounded by gods, upon whom he was himself dependent, and not only he alone, but his family and

the greater family, the state. At the same time he professed nothing in the nature of religious dogma; there was nothing that could be properly called a priesthood, specially gifted with a knowledge of things divine. The Greek could believe what he pleased, except deny the existence of the gods or attack the existing religion.

Inexorable Fate

An important element in Greek religion was Moira (Fate), representing the physical and moral laws that inexorably governed the universe, to which even the gods had to bow. Hence it was incumbent upon them to see that men kept and did not violate these laws, and they meted out rewards and punishments accordingly. The relation between men and gods, whose favour was to be gained and whose wrath appeased by various rites and sacrifices, and whose pleasure was learnt from the oracles, was regarded as a sort of contract. If the individual or state required the aid of the gods, they on their part had to give of their best in return.

That the Greeks believed in the existence of the soul after death is shown by propitiatory rites such as were performed, e.g., at the festival called Anthesteria, by offerings laid on the tomb which the shade of the departed was supposed to haunt, and by the honours paid to distinguished persons or local divinities such as Hercules and the oekist or founder of a colony, who were dignified with the title of heroes.

Up to the time of the Peloponnesian War, the general belief in the gods remained unshaken among the people. After that time, a general moral, social, and political decay set in. The people became impregnated with the scepticism of the philosophers and of dramatists like Euripides. Unbelief and religious indifference took its place, succeeded by superstition, which in turn led to the prevalence of mystical sects and rites like those of the Orphic and other mysteries, and to the introduction of foreign divinities. See Hero; Mystery; Mythology; Oracle; Orphism.

J. H. Freese
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Greeley, HORACE (1811-72). American journalist. Born on a New Hampshire farm, Feb. 3, 1811,

he joined the staff of a country newspaper at the age of 15, and in 1831 made his way to New York as a journeyman printer. After a first failure with a paper called *The Morning Post* (1833), he founded *The New Yorker* in 1834, the literary excellence of which gained him an immediate reputation. He started *The Tribune* in 1841, and the large circulation of this paper in the N. and W. gave Greeley an opportunity of preaching his political doctrines.

The question of slavery early engaged his attention, and by 1850 *The Tribune* was an unflinching advocate of abolition. Delegate to the fateful Republican national convention of Chicago in 1860, Greeley helped forward the nomination of Lincoln, and staunchly supported the president through the war. He was one of the bailees of Jefferson Davis, and thereby incurred the anger of a large section of the northern public. Vigorously opposing the re-nomination of Grant in 1872, he was himself nominated by the Liberal Republicans, and carried six southern states; but the consequent mental strain, coupled with the loss of his wife, proved too much, and he died suddenly, Nov. 29, 1872. See Life, A. H. Sotheran, 1892.

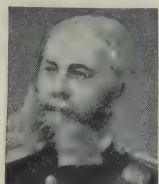


Horace Greeley



Horace Greeley. The house in Amherst, New Hampshire, in which he was born

Greely, ADOLPHUS WASHINGTON (b. 1844). An American explorer. Born at Newburyport, Mass.,



Adolphus W. Greely,
American explorer

March 27, 1844, he served in the Civil War (1861-65). Remaining in the army, he became a brigadier-general in 1887. He was appointed, in 1881, to command a polar expedition,

and with a party of 25 men reached the then farthest North (83° 24'), crossing Grinnell Land to the Polar Sea. Two relief expeditions failed to find them, and when the third succeeded, only seven of his party were alive.

Greely was largely employed in the signal arrangements of the Spanish-American War, was in charge of the relief operations at San Francisco after the earthquake in 1906, and was promoted major-general the same year. He retired in 1908, his Three Years of Arctic Service, 1883, giving an account of his expedition.

Green. River of Kentucky, U.S.A. Rising in the centre of the state, it flows for 300 m. W. and N.W. to the Ohio river, about 7 m. above Evansville. Locks and dams have made the river navigable for small steamers to Greensburg, about 200 m. upstream.

Green. Headstream of the Colorado river, U.S.A. Rising on the slopes of the Wind river range in Wyoming, it follows a S. course through the Uinta Mts., in which it has cut a series of deep cañons, and joins the Grand river in the S.E. of Utah to form the Colorado. Its length is about 710 m.

Green, ALICE SOPHIA AMELIA (b. 1848). British historical writer. Born at Kells, Ireland, 7th child of Edward Adderley Stopford, archdeacon of Meath, she married, in 1877, John Richard Green. Her writings include Henry II, 1888; Town Life in the Fifteenth Century, 1894; The Making of Ireland and Its Undoing, 1908; Irish Nationality, 1911; and Woman's Place in the World of Letters, 1913. She edited several editions of J. R. Green's Short History of the English People, including that of 1916, which contains an additional chapter.



Alice S. A. Green,
British historian

Green, ANNA KATHARINE (b. 1846). American novelist. Born at Brooklyn, Nov. 11, 1846, she was the author of numerous stories of crime and criminal detection. She made an enormous hit both in America and in Great Britain with her first novel, The Leavenworth Case, 1878, a story with a most ingenious plot. Her later stories include The Sword of Damocles, 1881, The Forsaken Inn, 1890, and The Filigree Ball, 1903.

Green, CHARLES (1785-1870). British aeronaut. Born in London, Jan. 31, 1785, he interested himself



Charles Green,
British aeronaut

in aeronautics and, on the coronation of George IV, in 1821, was the first to ascend in a carburetted hydrogen gas balloon, from Green Park. After this, he made many ascents, and in 1836 ascended from Vauxhall in his Great Nassau balloon, taking eight passengers and remaining aloft an hour and a half. In 1838 he made two ascents from Vauxhall, attaining 19,335 ft. and 27,146 ft. respectively. His last ascent was in 1852, and he died March 26, 1870. Green demonstrated the possibility of using coal gas in balloons, and invented the guide rope.

Green, HETTY HOWLAND ROBINSON (1835-1916). American financier. In 1865 she inherited a large fortune from her father, Edward M. Robinson, and two years later married Edward H. Green. She had remarkable business ability, and managed, without outside help or advice, large estates and an enormous business in stocks and shares. She died July 3, 1916, leaving a fortune computed at £20,000,000.

Green, JOHN RICHARD (1837-83). British historian. Born in Oxford, Dec. 12, 1837, he was edu-

cated at Magdalen College School and Jesus College. He became a clergyman and held an incumbency at Stepney, but ill-health compelled him to abandon parish work, and for a little time he was librarian at Lambeth. He had soon a reputation by his contributions to The Saturday Review, and from about 1868 to his death he devoted himself to historical study. He died at Mentone, March 7, 1883.



John Richard Green,
British historian
After J. Sandys

Green's great work is his Short History of the English People, perhaps the most popular work of its kind; it appeared in 1874, and there have been many later editions. In this he avoided the conventional historical divisions, and laid more stress upon important social and religious movements than upon kings, wars, and treaties. But its great attraction is its style, for it abounds in passages that linger in the mind. Its accuracy cannot be seriously questioned, but its author's knowledge of the later centuries was hardly equal to that of the earlier ones, and certain theories are pressed too far.

His more detailed Making of England, 1882, and Conquest of England, 1883, are of great value to students of the Anglo-Saxon period. He was the author of several volumes of Essays and miscellaneous writings, and helped to found The English Historical Review. See The Letters of J. R. Green, ed. Leslie Stephen, 1901.

Green, THOMAS HILL (1836-82). British philosopher. Born at Birkin, Yorkshire, April 7, 1836, he was educated at Rugby and Balliol College, Oxford. His father was a clergyman, and he claimed descent from Oliver Cromwell. In 1860 he was elected to a fellowship at Balliol, and in Oxford he remained all his life. He was on the tutorial staff at Balliol, and from 1878 was professor of moral philosophy in the university. He died March 26, 1882.

He was the most penetrating influence in the Oxford of his day, and, through his pupils, his influence on English philosophy, especially political and moral philosophy, was profound. In politics he was a Liberal, in some matters an advanced Radical. He took great interest in educational matters and was actively concerned in social movements for the betterment of the working classes. As a philosopher he was, under the influence of Kant, Hegel, and Fichte, the chief representative of English critical idealism, opposed to the empiricism of John Stuart Mill and Spencer.

Knowledge, to him, was the reproduction of an eternal mind in human personality. The entity which embraces all relations of experience is the infinite, absolute subject, the eternal, pure self-consciousness, the synthetic principle of unity which manifests itself in the individual. As a political philosopher he accepted in the main Hegel's theory of the state, but adapted it in certain particulars to meet his own views. It is only in the state of society that the individual can find the rightful sphere for his activities. In Robert

Elsmere, Green appears as Mr. Gray. His teaching is contained in his *Prolegomena to Ethics* and his *Lectures on the Principles of Political Obligation*.

Green, VALENTINE (1739-1813). British engraver. Born at Salford, near Chipping Norton, Oxfordshire,



Valentine Green,
British engraver
After Abbott

Oct. 16, 1739, he refused to take up law, and studied line engraving under Robert Hancock of Worcester. Later on he came to London, took up mezzotint, and before he was

thirty achieved unqualified success. His prints after Benjamin West's *Return of Regulus to Carthage* and *Hannibal swearing eternal enmity to the Romans* were the largest mezzotints until then produced. He translated Sir Joshua Reynolds's portraits with rare sympathy and skill, and proofs in prime condition now fetch very high prices. He exhibited at the R.A. in 1774, and in 1775 was elected associate engraver and became mezzotint engraver to George III.

In 1789 the elector of Bavaria gave him the sole right to engrave and publish prints after the originals in the Düsseldorf Gallery, but he had only completed 22 plates when the gallery was destroyed in 1798 during the siege of the town by the French. On the foundation of the British Institution in 1805 he was appointed keeper. He died in London on June 29, 1813. His plates number 400, and though he is best known by his portraits, he engraved many subjects by the Old Masters, such as Rubens' *Descent from the Cross*, Domenichino's *Virgin and Child*, Murillo's *S. John with the Lamb*, Ludovico Carracci's *Entombment of Jesus*, and Agostino Carracci's *Venus and Cupid*. He engraved portraits after Van Dyck, George Romney, and others, besides those by Reynolds.

Greenaway, KATE (1846-1901). British artist. Born in Hoxton, London, March 17, 1846, her father, John Greenaway, being a well-known wood engraver, she studied at the South Kensington Art School, Heatherley's Academy, and the Slade School.

Her earlier efforts were limited to



Kate Greenaway,
British artist



Kate Greenaway. *P Peepled In It*, a characteristic Greenaway drawing from an alphabet series
S. Kensington Museum

valentines and Christmas cards, although she exhibited occasionally, for the first time at the Dudley Gallery in 1868, and at the Royal Academy in 1877.

The work with which Kate Greenaway's name is chiefly identified consists of drawings, chiefly in colour, but often in black and white, illustrating stories and poems for children. The girls and boys are garbed in the costume of the early 19th century, and the resulting pictures are quaint and attractive, being saved from the pedantry of archaism by the juvenility of the figures and charm of composition.

Her work enjoyed an immense vogue, and for a long time "Kate Greenaway" frocks were the fashion for little girls. From 1880 almost to her death at Hampstead, Nov. 6, 1901, not a year passed without several books from her hand. Some she wrote as well as illustrated, such as *Under the Window*, 1879, and *Marigold Marsh*, 1885, the latter perhaps the most successful of the series from a commercial standpoint.

Greenback. Popular name of the paper money first issued by the U.S.A. during the Civil War, and so called because the printing on the back of the notes is in green ink.

Green Bay. Opening of Lake Michigan, penetrating for 120 m. S.W. into Wisconsin, U.S.A. It has a greatest breadth of 20 m. and an extreme depth of 120 ft., and derives its name from the colour of its water. The Fox river enters at its head, and its mouth is obstructed by a number of islands.

Green Bay. City of Wisconsin, U.S.A., the co. seat of Brown co. A port of entry at the head of Green Bay, 112 m. N. of Milwaukee, it is served by the Chicago, Milwaukee and St. Paul and other rlys. Its chief buildings are the

court house, the municipal and federal buildings, the public library, and several hospitals and educational institutions, while not far away is the state reformatory.

An important rly. centre, its harbour is accessible to the largest lake vessels, and a large trade is carried on in coal, lumber, fish, and grain. It contains rly. repair shops, lumber yards, and canneries, and manufactures

agricultural implements, machinery, gas engines, flour, bricks, and tiles. Green Bay stands near the site of an old Indian village and was permanently settled about 1745. It was incorporated in 1838 and became a city in 1854. Pop. 30,017.

Green Cloth, BOARD OF. Department of the British royal household. It is presided over by the lord steward, who has under him the master of the household and other officials. It is charged with the duty of supervising the household, including the kitchen, arrangements of the court, etc., the office being at Buckingham Palace. It is so called because of the covering of the table at which the lord steward and his subordinates sat. See Lord Steward.

Green Cross Society. Corps of women motor drivers in the Great War. It was established in June, 1915, and was officially known as the Women's Reserve Ambulance. Members drove either their own or the corps' vehicles, and specialised in connecting the ambulance trains arriving in London with certain hospitals, mostly in the suburbs, but were trained and equipped to render ambulance service in any direction.

Included in the membership were hundreds of girls, most of them engaged in business, who devoted their leisure to work in hospitals and canteens, or who acted as station guides for returning soldiers. They also rendered valuable help during the air raids on London, and supplied large numbers of recruits to other corps. A detachment went as ambulance drivers with Dr. Elsie Inglis (*q.v.*), of the Scottish Women's Hospital, to Russia and Rumania. The uniform was of green cloth, hence the popular designation of the corps.

Greene, HARRY PLUNKET (b. 1865). British singer. Born in Dublin, June 24, 1865, a son of Richard J. Greene and a grandson of Lord Plunket, he was educated at Clifton College. He was originally intended for the bar, but the development of his voice induced him to study for the musical profession at Stuttgart and Florence. In 1888 he appeared in London as a baritone in *The Messiah*, and afterwards took leading parts in oratorio and opera, while his interpretation of the great classical songs revealed high artistic power. Greene also became professor of singing at the Royal Academy of Music and the Royal College of Music.

Greene, NATHANAEL (1742-1786). American soldier. Born Aug. 7, 1742, at Potowomut,

Rhode Island, the son of a Quaker, on the outbreak of the War of Independence he enlisted as a private in the colonial army. In 1775 he was appointed to the command of the Rhode Island contingent with the rank of brigadier-general. At the battle of Brandywine he led a reserve force, and in 1780 he was made commander of the army of the South, in which



Nath Greene

From the statue in the Capitol, Washington

capacity he eventually cleared Georgia and N. and S. Carolina of the British. He died near Savannah, June 19, 1786.

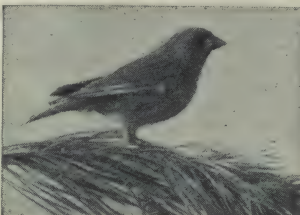
Greene, ROBERT (c. 1560-1592). English poet and prose writer. Born at Norwich, and educated at S. John's College and Clare Hall, Cambridge, he was one of the founders of English romantic comedy and prose fiction. His prose pastoral Pandosto inspired Shakespeare's *Winter's Tale*. He died in poverty, Sept. 3, 1592, and was buried near Bethlem Hospital, Bishopsgate, London.

Of some forty works attributed to him, most of which are pamphlets containing idyllic pictures of womanhood, impressions of country life, and descriptions of the shady side of the London of his day, the most important are the plays, *Friar Bacon* and *Friar Bungay*,

James IV, and *Pandosto*, and the autobiographical *Groatsworth of Wit*, containing a reference to "the only Shake-scene," which is generally assumed to be a depreciation of Shakespeare, to whose *Henry VI* and *Titus Andronicus* he is believed to have contributed. He wrote some charming lyrics, notably in his *Menaphon*. His first romance, *Hamillia*, was influenced by the *Euphues* of Lyly. His complete works were edited by Grosart, 1881-86, and his plays and poems by Churton Collins, 1905.

Green Earth. Name given to a dark greenish soft mineral substance, a hydrous silicate rich in iron. It is found chiefly in cavities of eruptive rocks or ancient lavas.

Greenfinch OR **GREEN LINNET** (*Ligurinus chloris*). Common British song-bird. Usually found in



Greenfinch, a British hedgerow song-bird

fields and hedgerows, it is greenish yellow on the back, with yellow underparts, and is one of the handsomest of the smaller birds. The hen is less brightly coloured than the male. The greenfinch feeds upon grain and seeds.

Green-Fly. Popular name for various species of plant-lice (*Aphis*) of the insect order Hemiptera-Homoptera. They are soft-skinned, with six delicate legs and the mouth modified into a very fine piercing organ through which they suck continuously the juices of plants. The young are hatched out in a form similar to the adult, so there is no transformation. Theoretically the adults have four exceedingly delicate and hyaline wings with only a few strengthening nervures; but few of the summer brood ever develop wings. Winged individuals are numerous in the autumn brood.

After pairing these produce eggs which hatch in spring, the brood consisting mainly of imperfect, wingless females which, without pairing, bring forth living young which after three weeks exhibit the same power of virgin production, which is continued through several generations. It is this power which accounts for the enormous and rapid multiplication of green-fly on roses, etc. Most species of green-fly are pro-

vided on the upper surface of the hind-body with a pair of tubes through which liquid wax is ejected at their enemies—ichneumon-wasps, lady-birds, and syrphus-flies.

It was formerly supposed that ants derived honey-dew from these tubes, but this sweet substance is really the excrement of the Aphides. On account of the advantage thus derived, ants frequently take special care of flocks of green-fly that they place on suitable plants—roots in the case of certain subterranean species. Green-fly may be brown, grey, or black coloured as well as green. See Insects.

Greenford. Urban dist. and parish of Middlesex, England. It is 8 m. W.N.W. of London by the G.W.R. It was styled Greneforde in Domesday Book, and Greenford Magna to distinguish it from Greenford Parva, which has been generally known since the 16th century as *Perivale* (*q.v.*). Situated between Southall and Harrow, the manor belonged to Westminster Abbey until the dissolution, and passed in 1550 to the see of London. The rectory and advowson have belonged since 1725 to King's College, Cambridge. The early Perpendicular flint and brick church, dedicated to the Holy Cross, and restored in 1871 and 1882, contains some brasses and examples of old stained glass. In the adjacent hamlet of Greenford Green is the factory, on the Grand Junction Canal, still used for industrial purposes, in which Perkin perfected his production of aniline dyes from coal tar. Horsenden Hill, a well-known eminence, is between Greenford Green and *Perivale*. Pop. 1,064.

Greengage. Fruit tree of the natural order Rosaceae, and genus *Prunus*. The greengage is really a variety of plum and needs the same system of culture. It was first introduced into Great Britain from the monastery of Charteuse in France, by Lord Gage, and it is supposed that the fruit is one of the primary and necessary ingredients in the preparation of the liqueur which bears the name of the monastery. It is largely grown in France, from which the chief supplies of Great Britain are derived. It is greatly valued as a dessert fruit. See Plum.

Greengrocer. English name for a retailer of fresh fruit and vegetables. See Grocer.

Greenheart (*Nectandra rodiaei*). Timber-tree of the natural order Lauraceae. A native of British Guiana, it attains a height of 60 or 70 ft. It has alternate leathery leaves and tubular flowers. Its



Greenheart. Foliage, flower-heads, and fruit, with section, of the timber tree

timber is of great strength and durability, and yields planks of great length, while ash-coloured bark (Bibiru-bark) is used medicinally in fevers and as a tonic.

Greenhithe. Parish and village of Kent, England. It is situated on the Thames, 2½ m. N.E. of Dartford, on the S.E. & C.R. In the vicinity are numerous chalk pits. Ingress Abbey, to the E., on the site of a grange which belonged to Dartford Priory, is a semi-Gothic mansion built partly of stone from old London Bridge. The church of S. Mary the Virgin dates from 1855.

Greenhouse. Term applied to structures of wood and glass erected for the protection and propagation of plants unable to undergo the rigours of winter. In Britain, if erected by the tenant of a house, such structures can only be removed by written permission of the landlord, unless they are of a portable nature. A tenant may not fasten any portion of his greenhouse to the floor by cemented bricks, or to the wall by nails, unless he is willing to lose his proprietary rights to the structure. Greenhouses are of two kinds, heated and unheated. The latter is technically known as the cool house and the former as the temperate house. *See Gardening.*

Green Howards. Official name of the Yorkshire Regiment, the 19th of the line. It was given to the regiment because after it was raised it had Sir Charles Howard for its colonel, and the men wore grass-green facings. Long used as a popular name for the regiment, in 1920 it was made the official title. *See Yorkshire Regiment.*

Greenland. Large island, mainly within the Arctic Circle, the only colonial possession of Denmark. Its area is about 826,000 sq. m. Lying N.E. of British N. America, its most northerly point, lat. 83° 39' N., is about 1,600 m. from its S. extremity in Cape Farewell, lat. 59° 45' N.

Its extreme breadth is 700 m. The coast is characterised by rugged cliffs, rising sheer from the ocean, with deep and tortuous, fiord-like, glacier-filled indentations, piercing inland in some cases for nearly 100 m. The principal inlets are Independence Fiord, Inglefield Gulf, Disco Bay, Scoresby Sound, Kane Basin, Petermann Fiord, Sherard-Osborn Fiord, and Franz Josef Fiord. The Greenland Sea lies off its E. coast, Denmark Strait separates it from Iceland in the S.E., while Davis Strait, Baffin Bay, Smith Sound, and the Kennedy and Robeson Channels divide it from Grant Land, Grinnell Land, Devon Island, and Baffin Island on the W.

Nearly the whole of Greenland is an elevated plateau, the mean alt. being 4,500 ft.; but in places there are eminences approaching 10,000 ft. The valleys have been filled in by accumulations of snow, so that its whole area presents a continuous and fairly level ice sheet extending from sea to sea. The largest of the glaciers is the Humboldt in the N.W., reputed to be the largest in the world. It discharges into Kane Basin on a front of 55 m.

Other large glaciers are the Great Karaik, the Jacobshavn, and the Petowik, all on the W. coast. The only ice-free areas are on certain parts of the S.W. and S.E. coasts during the summer months, when Arctic flora appears, with herbs, shrubs, and mosses in the N. and saxifrages, poppies, heath, anemones, with Arctic birch, elder, and willow, in the S.

The climate is extremely cold and foggy in the winter, but during the short summer in the S. the mean temperature is 48° F. Animals are not numerous, being represented by the polar bear, reindeer, musk ox, etc. Birds are more plentiful. The inhabitants

are Eskimos, found N. of Melville Bay, between Cape York and Etah.

The country is divided into two inspectorates—the southern inspectorate, which touches lat. 67° 20' N., and the northern, with undefined N. limits. The principal settlements are Upernivik, the most northerly village in the world; Godhavn, on the island of Disco, the capital; Sydproven, Christianshaab, Umanak, Jacobs-havn, Sukkertoppen, Frederikshaab, Ivigtut, and Julianehaab. The Royal Danish Greenland Co. monopolises the trade of Green-

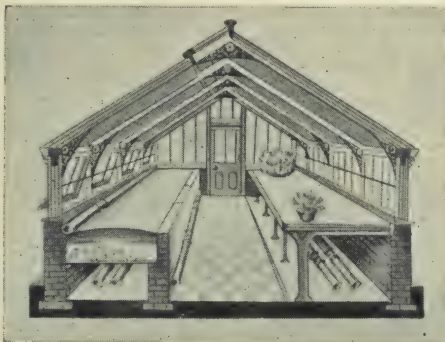


Greenland. Map of the Danish colony, most of which lies within the Arctic circle

land, which consists of whale and seal oil, furs, cryolite, and eider-down. There are extensive fishing grounds round the coasts, with cod and haddock as the principal catch.

Greenland was discovered and named towards the end of the 10th century by a Norseman, Eric the Red, who planted a colony on the S.W. coast. His son, Leif Ericson, when on a voyage from Norway to Greenland, is supposed to have discovered the mainland of America. Christianity was introduced and a bishopric established in the 12th century.

Intercourse with Europe was maintained until the beginning of the 15th century, when the increase of the Arctic ice completely



Greenhouse. Span-roof forcing house, suitable for any situation, shown in section

By courtesy of Boulton & Paul, Ltd., Norwich

imprisoned the colony and precluded all access. This settlement is said to have extended 200 m. in the S.E. of Greenland, and possessed several churches and monasteries. Nothing certain is known of the fate of the settlers.

In 1585 John Davis visited the country, but only found Eskimos, among whom were a few Norse traditions. In 1702 Hans Egede, a Danish missionary, founded Godthaab on the W. coast, and his example has been followed by others, so that the population now amounts to 13,449. The largest settlement is Sydproven, with 789 inhabitants. During recent years the immense icecap has been crossed by Nansen, Peary, Rasmussen, De Quervain, and Koch; and much geographical knowledge of the coast and the neighbouring seas has been obtained.

Greenland Hill. Name given to high ground 2 m. S.E. of Gavrelle, France, in the dept. of Pas-de-Calais. It was an important tactical point in the German line during the Great War, and fighting took place between the British and Germans for its possession in the third battle of Arras, April-May, 1917. It was stormed by the British 51st division on Aug. 26, 1918. *See* Arras, Battles of.

Greenland Sea. Arm of the N. Atlantic Ocean, lying N. of lat. 70° N., between Greenland on the W., Spitzbergen on the E., and Iceland on the S. Its breadth is about 400 m., and its depth varies from 2,550 fathoms off Spitzbergen to 1,000 fathoms off the W. coast of Jan Mayen. The current from the Arctic Ocean runs down the E. shore of Greenland.

Greenlaw. Parish and village of Berwickshire, Scotland. It stands on Blackadder Water, 7 m. S.W. of Duns and 62 m. from Edinburgh. It has a station on the N.B. Rly. Greenlaw was the co. town of Berwickshire until 1853, and was long a centre of the woollen manufacture, which is still carried on to some extent. Near it is Hume Castle (*q.v.*). Pop. 550.

Green Mountains. Northern section of the Appalachian system, U.S.A. The range extends in a N. direction from near the Hudson river in New York through Massachusetts and Vermont. Its general elevation is from 2,000 ft. to 2,500 ft. above sea-level, the highest summits occurring in the N. and centre of Vermont, Mt. Mansfield, 4,364 ft., being the loftiest.

Part of the range forms the watershed of the affluents of the Cumberland river and the streams flowing to the Hudson river and Lake Champlain. Extensive forests of

pine, spruce, and other trees cover the slopes of the range, which contain rich deposits of iron, marble, manganese, and other minerals.

Greenock. Municipal and police burgh and seaport of Renfrewshire, Scotland. It stands on the S. side of the Firth of Clyde, 22 m. from Glasgow, and is served by the Cal. and Glasgow & S.W. Rlys. A service of electric tramways connects it with Port Glasgow on the east side and Gourock on the west.



Greenock arms

The chief buildings include the town hall and municipal buildings, the Watt Institution, and Greenock library, and the Custom House.

There is a technical college and other colleges and schools; also several hospitals and other charitable institutions. The oldest church is a 16th century building. In its churchyard Highland Mary (*q.v.*) was buried, but in 1920 the ground and site of the church were taken for an extension of a shipbuilding yard. The parks include Well and Wellington. Along the sea front is a fine esplanade, and the town has golf links.

The chief industries of Greenock are shipbuilding and shipping. The port has been continuously improved since it was first opened in 1710, and has now a large import and export trade. Tourist steamers start from Prince's Pier. There are several harbours, with docks both wet and dry, a great extent of quays and other accessories of a first-class port; also great shipbuilding yards. The town is a centre for sugar refining, while engines, boilers, and other requirements of ships, *e.g.* ropes and sailcloth, are made, as are textiles, paper, aluminium, etc. Distilling and oil refining are carried on.

Greenock became a burgh in 1635, and a flourishing seaport after the union of Scotland with England in 1707. Here James Watt was born. It is governed by a corporation that controls the supplies of gas, water, and electric light; and sends one member to Parliament. Pop. (1921) 81,120.

Greenockite. Mineral sulphide of cadmium. It crystallises in double six-sided yellow crystals belonging to the hexagonal system, and is found in Renfrewshire and Dumbartonshire, Przibram (Bohemia), and Laurium (Greece).

Greenore. Seaport of co. Louth, Ireland. It stands on the N. side of Carlingford Lough, 2 m. S.E. of Carlingford. It has a rly. station, and the L. & N.W. Rly. has made it the terminus of a service from Holyhead. There is a pier and accommodation for steamers. The L. & N.W. Co. owns a line that runs from here to connexions with the G.N. of Ireland system. The place, which has golf links, is visited by pleasure-seekers, and a steam ferry goes to Greencastle on the other side of the lough. Pop. 290.

Green Park. Open space in London. It covers 54 acres between Piccadilly and St. James's Park and Constitution Hill. A favourite resort of Charles II, it had a notoriety for duels, the duchess of Cleveland witnessing a combat here in 1696 between her lover Fielding and Sir



Greenock. View from the harbour, with the quay and the tower of the municipal buildings

Henry Colt. Queen Caroline's library was in the park, but was pulled down for the purpose of erecting Stafford House. *See* Air Defences.

Green Room. Room in a theatre set apart for the social use of actors and actresses, so-called, it is supposed, because green used to be the prevailing colour of its wall-paper, or furniture, or of both. *See* Actor; Theatre.

Greensand. Two series of beds of sands and sandstones which form the lower part of the Cretaceous system and known as upper and lower. In Kent they are separated by a clay development, the Gault. The prevailing green colour is due to grains of glauconite scattered through the beds. Lower Greensand is well developed in the Isle of Wight, where the beds are 100 ft. thick, and S.W. of England, and forms a rim round north, west,

and south of the Weald. At Leith Hill, Surrey, they reach an elevation of 965 ft. The thickness and character of the beds are variable. Greensand makes good building stone, as characterised by Bargate stone, near Reigate, and Kentish Rag, near Maidstone. The beds extend from Wiltshire through to Cambridgeshire, often as yellow and brown sands, with ironstone. Upper Greensand is quite distinct from Lower Greensand in its fossil contents. See Gault.

Greensboro. City of North Carolina, U.S.A., the co. seat of Guilford co. It is 80 m. W.N.W. of Raleigh, and is served by the Southern Rly. It contains several educational institutions, including Greensboro Female College, the State Normal and Industrial College for Women, and Bennett College and the State Agricultural and Mechanical College, both for negroes. Other buildings are the Carnegie public library, an auditorium, and several hospitals.

A large trade in tobacco, maize, cotton, and lumber is carried on, and there are manufacturing plants for cotton goods, machinery, handles and spokes, fertilisers, carpets, cigars, and flour. Greensboro was founded in 1808, and received a city charter in 1870. Pop. 18,400.

Greensburg. Borough of Pennsylvania, U.S.A., the co. seat of Westmoreland co. It is 31 m. E. by S. of Pittsburg, and is served by the Pennsylvania Rly. Among several educational institutions are St. Joseph's Academy and St. Mary's Academy, both for Roman Catholics. It trades largely in the local coal, and manufactures iron and brassware, glass, lumber products, engines, nuts, bolts, flour, and bricks. Greensburg was settled in 1784, and was incorporated fifteen years later. Pop. 13,000.

Greenshank (*Totanus canescens*). Wading bird of the snipe family, so called from its olive legs. It visits Great Britain in autumn and winter, and is most common in the N. of Scotland, where it is usually found by the shore, feeding on small crustaceans and molluscs.

Greenstone. Name given to certain granular crystalline rocks consisting of felspar with augite, hornblende, or hypersthene. The latter three give it its characteristic and greenish colour. See Dolerite.

Greenville. City of S. Carolina, U.S.A., the co. seat of Greenville co. It stands on the Reedy river, 160 m. N.E. of Atlanta, and is served by the Southern and other rlys. It is an educational centre, and contains the Furman University, Granville Female College, Chicora College, and

the Ursuline Academy. The industries include iron-founding, bleaching, and the manufacture of wagons, carriages, cotton, and fertilisers. Settled in 1776, it was incorporated in 1831, and became a city in 1868. Pop. 17,400.

Greenwell, DORA (1821-82). British essayist. She was born at Greenwell Ford, Durham, Dec. 6, 1821, and died March 29, 1882. Her work, while individual, has much in common with that of Christina Rossetti. Marked by deep religious feeling, it touches ancient myths and medieval legends; it caught from Greek exemplars a love of beauty, a *flair* for the simple but subtly expressive word, an acute sense of the enigma of life; and its musical quality bespeaks the author's love of German lyric and Provençal and Italian rhyme.

In *Carmina Crucis*, 1869, her treatment of the story of Persephone is typical; in the poem *Poet and Painter* (Lucretius and Leonardo da Vinci) she contrasts differing forms of unbelief; in *Camera Obscura*, 1876, the poem *Between Two Worlds* embodies a vision of the passing dead in terza rima of haunting impressiveness. She touched the heroic in her *Song of Roland*, *The Battle Flag of Sigurd*, and *The Flaming Oar*. Her prose work included memoirs of Lacordaire, 1868, and John Woolman, 1871; *The Patience of Hope*, 1860; *Essays*, 1866; and *Colloquia Crucis*, 1871. See *Memoirs*, W. Dorling, 1885.

Greenwich. Parl. and mun. bor. of London. It is on the right bank of the Thames, 6 m. from London on the S.E. & C.R., is connected with the Isle of Dogs (q.v.) by a tunnel, opened in 1902, for foot passengers (station, N. Greenwich, on the G.E.R.), and by the Blackwall



Greenwich arms

wich, on the G.E.R.), and by the Blackwall

Tunnel (q.v.) with Blackwall. There is 'bus and tram communication with the city. The bor. is bounded W. by Deptford, S. by Lewisham, and E. by Woolwich. Sixth in size of the London bors., its principal buildings are Greenwich Hospital, Naval College, and Observatory, described separately; the Herbert and Brook Fever Hospitals, the parish church, and several almshouses. Its open spaces include the park, 185 acres; Blackheath, 267 acres; and part of Woolwich Common. There are telegraph, engineering, and chemical works. Notable inns are the Trafalgar, the Ship, and the Crown and Sceptre. The ministerial "white-bait dinners" were held at Greenwich, 1864-68, 1874-80, and 1894, latterly at the Ship.

Once a Danish encampment, Greenwich was originally, and for centuries, a small fishing town. The manor, once the property of the abbey of S. Peter, at Ghent, was transferred to the Carthusian priory at Sheen, and was later given to Humphrey, duke of Gloucester, who enclosed a park of 200 acres, rebuilt the palace on part of the site now occupied by Greenwich Hospital, and erected a tower, Greenwich Castle, on the hill where the Observatory stands. Henry VIII, who was born and baptized at Greenwich, here married Catherine of Aragon. Queen Mary and Queen Elizabeth were born and Edward VI died here. James I settled palace and park on his wife Anne of Denmark. Charles I lived at Greenwich until the outbreak of the Civil War; Cromwell resided here, and at the Restoration the place once again reverted to the Crown. The palace was partly rebuilt, and formed the nucleus of the hospital.

The parish church, dedicated to S. Alphege, who was martyred here by the Danes in 1012, was rebuilt in 1718, and contains monuments to Wolfe and Tallis. Lavinia Fenton, duchess of Bolton, was buried in the churchyard in 1760. Dr. Johnson lived in Church Street in 1737. Down to 1857, two fairs, notable for their boisterous character, and described by both Dickens and Thackeray, were held annually at Easter and Whitsun. One member is returned to Parliament. Pop. of bor., 100,493.



Greenwich. Entrance to Royal Hospital school, where sons of sailors and marines are trained

Greenwich. Town of Connecticut, U.S.A., in Fairfield co. It stands in a picturesque position on Long Island Sound, 27 m. N.E. of New York City, at the S.W. extremity of the state, and is served by the New York, New Haven and Hartford Rly., besides having connexion with New York by steamer and electric rly. A residential district and holiday resort, it contains Greenwich Academy and other educational establishments. The place is noted for its oysters. It was settled in 1640. Pop. 18,277.

Greenwich Hospital. British institution founded for aged and infirm sailors, and since 1873 the home of the Royal Naval College. Situated on the right bank of the Thames, 5 m. below London Bridge, it occupies the site of an old royal palace, and of its successor, built by Humphrey, duke of Gloucester, and named by him Placentia. Charles II, in 1667, began to rebuild the palace from designs by Inigo Jones and Webb, but only one wing was completed. Building was resumed under William III and Anne, from designs by Wren. In 1705 the new buildings were opened as a seamen's hospital, in memory of the naval victory of La Hogue, and of Queen Mary, consort of William III.

The buildings consist of several groups. The original design of the massive river façade is ascribed to Webb. To a second group belong the completion and extension of the river façade, and the S. blocks, designed by Wren, with fine colonnades and the W. and E. domes. The E. dome was completed by Hawksmoor. To the second group belongs also the Painted Hall, once the dining hall, designed and carried out by Wren. The pavilions at each extremity of the terrace were built in 1778. The King Charles buildings are divided from those of Queen Anne by a great square on the river front. The statue of George II in the centre

was executed by Rysbrack out of a single block of white marble, captured from the French by Admiral Rooke.

Beyond the square are the Hall and Chapel, each with a beautifully proportioned dome. Other buildings are the old infirmary, now the Seamen's Hospital; and the Royal Hospital School, the central part of which was designed by Inigo Jones. The Painted Hall contains relics of Nelson and other naval men, and many portraits and battle pictures. In the museum are a collection of models, and a Franklin room. The chapel, burnt in 1779, was rebuilt in 1779-89, and restored in 1851 and 1882. The N. and S. fronts of the hospital are of Portland stone, the W. of brick. On the terrace are two obelisks in memory, respectively, of Lieut. J. R. Bellot, the French Arctic explorer (d. 1853), and the marines who fell in the New Zealand war of 1863-64.

Greenwich Naval College.

British institution for the higher education of officers for the royal navy. When the system of inspections at Greenwich Hospital expired in 1869, the greater part of the buildings was adapted to the needs of the College, which was opened in 1873. In addition to officers of the R.N., it is open to those of the R.M.A., R.M.L.I., the Royal Indian Marine, and the merchant service. Courses of instruction are provided also for private students of naval architecture and marine engineering. The president, a flag officer, is assisted by a naval captain, commander, and a large staff of instructors.



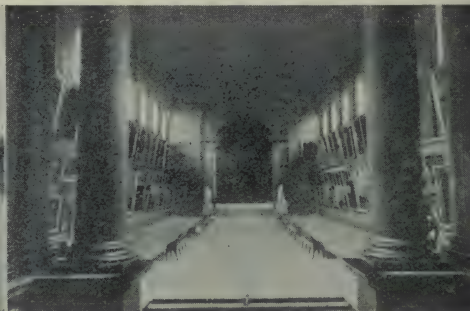
Greenwich Observatory. The extension opened in 1897

Greenwich Observatory. Headquarters of the British astronomer royal. Founded by Charles II, on a hill in the centre of Greenwich Park, on the site of a tower built by Duke Humphrey, it was handed over to Flamsteed, the first astronomer royal, in 1676. From here is reckoned the zero meridian of longitude in British maps and charts; and here is reckoned what is known as Greenwich mean time. Admiralty chronometers and watches are supplied, repaired, and rated at the Observatory, in connexion with which are magnetic and meteorological observatories.

The work in all the observatories is continuous, the instruments are numerous and of the highest quality, and only visitors making serious scientific inquiries are, as a rule, admitted. On the E. wall are a 24-hour electric clock, and various standards of length. A new building was completed in 1897. A fine view can be obtained from the terrace. Details of the work carried on are supplied in annual official reports. A little to the E. are the buildings that contain the magnetic instruments, and to the N. of these remains of a Roman house were discovered in 1902. *See* Clocks; Observatory; also frontis. to Vol. I.



Greenwich Hospital from the river. On the left are Queen Anne's buildings; on the right, King Charles's buildings



Greenwich Hospital. The Painted Hall, formerly the dining hall, containing portraits of naval celebrities

Greenwood, Frederick (1830-1909). British journalist. He was born in London, March 25, 1830.



Frederick Greenwood,
British journalist
Russell

After acting as reader to a firm of printers and publishers, he took to writing essays and novels for newspapers and magazines. He was first editor of *The Queen*, 1861-63; assistant editor, with G. H. Lewes, 1862-64, and then editor, 1864-68, of *The Cornhill Magazine*; and first editor of *The Pall Mall Gazette* from Feb., 1865. When in April, 1880, its proprietors and politics were changed, he and his staff resigned, and in May started *The St. James's Gazette*, of which he was editor until 1888. He founded and edited *The Anti-Jacobin*, 1891-92. He died at Sydenham, Dec. 14, 1909.

He devoted special study to foreign affairs, was a strong opponent of Gladstone's anti-Turkish policy, and suggested to Beaconsfield the purchase by Great Britain of Ismail Pasha's Suez Canal shares, of the intended sale of which he had received early information. Of his novels the best is Margaret Denzil's *History*, 1864. He was the author also of *The Lover's Lexicon*, 1893, and *Imagination in Dreams*, 1894; and figures as Richard Rockney in George Meredith's *Celt and Saxon*.

Greenwood, Sir Hamar (b. 1870). British politician. Born at Whitby, Ontario, Feb. 7, 1870, he was educated there and at the university of Toronto. For a time he was in the Ontario department of agriculture, an officer in the Canadian militia, and was also a barrister. In 1906 he was elected as a Liberal for York, and became parliamentary private secretary to Winston Churchill, then under-secretary for the colonies. Defeated at York in Jan., 1910, he found a seat at Sunderland in Dec. In 1924 he was elected M.P. for East Walthamstow.



Sir H. Greenwood,
British politician
Russell

In 1915 Greenwood commanded a service battalion of the S. Wales Borderers. In 1916 he returned to England, and was for a time at the War Office. In 1919 he was made under-secretary for the home de-

partment, and from 1920 to 1922 was chief secretary for Ireland. In 1915 he was made a baronet. See *Ireland: History*.

Greenwood, Thomas (1851-1909). Advocate of rate-supported public libraries. Born at Woodley, near Stockport, Cheshire, May 9, 1851, he began business life as a clerk in a hat works, and then became a library assistant at Sheffield. He founded in London a number of trade journals, which he edited, wrote a biography of Edward Edwards the librarian, 1902, and was the author of *Public Libraries, Their Organization, Use, and Management*, 1886, 5th ed. 1894. He formed a large bibliographical library, which, with the library of Edwards, he presented to Manchester Public Library, where it is known as the Thomas Greenwood Library for Librarians. He died at Elstree, Herts, Nov. 9, 1908.

Greenwood Case. Sensational trial at Carmarthen Assizes, Nov. 2-9, 1920, of a Kidwelly solicitor who was charged with administering arsenic to his wife. He was defended by Sir Edward Marshall Hall, K.C. The trial was remarkable for the extreme conflict of evidence, and for the weakness of the evidence for the prosecution, and it brought out strongly the defects of the circuit system, under which the accused man was kept in prison for more than four months awaiting his trial on a capital charge, before his acquittal at the hands of the jury.

Greet, Ben. British actor manager. Born on a training ship in the Thames, which his father commanded, he was educated at the Royal Naval School, New Cross. In 1879 he first appeared on the stage at Southampton, and after playing in London, entered on management in 1886. For 25 years he toured with his own company, chiefly in Shakespeare. In 1901 he revived the old morality *Everyman* in London, and for many years from 1902 was engaged in management at New York. During the Great War and after he produced Shakespearean plays at the Royal Victoria Hall ("Old Vic"), London, and elsewhere.

Gregale. Name given to a dry N.E. wind which blows over Malta. It has been identified with the Bora, which often rages with great severity in the Adriatic, and the Euroclydon, which wrecked S. Paul's ship (Acts xxvii, 14).

Gregarines. Parasitic single-celled animals, protozoa, found in the alimentary canals of invertebrates, chiefly the arthropods. There are a large number of species, among the more important

being those found in the earthworm, lobster, cockroach, and cuttlefish. The effect of the presence of these parasites on the bodies of their hosts is as a rule purely local. See *Sporozoa*.

Grégoire, Henri (1750-1831). French bishop and revolutionary. Born of peasant stock at Vého,



Meurthe-et-Moselle, Dec. 4, 1750, he was educated for the priesthood by the Jesuits at Nancy. He sat in the States General of 1789, prominent as one of the revolutionary clergies who joined hands with the third estate. With the latter he attacked the privileges of the clergy, though firmly maintaining his Catholic beliefs, and, under the new civil constitution of the Church, was elected bishop of Blois, 1791. In 1792 he strongly advocated the abolition of the monarchy, and became president of the convention in Nov.

During the consulate he continued to work for ecclesiastical reform, but, opposing Napoleon's concordat with Pope Pius VII, resigned his bishopric in 1801. In the senate he vainly opposed the establishment of the empire, and worked against it during its last months in 1814. After the Bourbon restoration, however, owing to his past record, he was forced to live in retirement. In 1819 he was elected to the chamber for the dept. of Isère, but the election was quashed by a special vote. After this he finally retired and wrote a number of books on ecclesiastical history. He died at Auteuil, May 28, 1831.

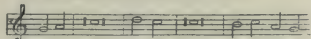
Gregorian Calendar. Calendar introduced by direction of Pope Gregory XIII in 1582. It was a reform of the Julian calendar, but was not adopted in Great Britain until 1752. See *Calendar*.

Gregorian Chant. Term applied to the plainsong system used in the rendering of the music of the services of the Church as supervised and settled by S. Gregory. The principal eight modes or tones may be described as represented by the white notes alone of the pianoforte, with the exception of an occasional B flat to avoid the harshness of the tritone. The four authentic modes are No. 1 (Dorian, D to D), No. 3 (Phrygian, E to E), No. 5 (Lydian, F to F), and No. 7 (Mixolydian, G to G). Coupled with each of these, but lying a fourth lower, is a plagal mode distinguished by an even

number and having the prefix hypo to the Greek term. Each pair has the same final, but a different



The same in modern notation



Gregorian Chant. Tone VIII, 1st ending, with transliteration into modern notation

dominant, i.e. the note to which the recitation is chanted. The dominant of an authentic mode is the fifth degree except when, as in No. 3, that happens to be B, then the dominant is the sixth. The dominant of a plagal mode is a third lower than that of its associated authentic mode, except that C takes the place of B as before.

Structurally, the chant begins with an intonation, used in every verse of the Canticles, but only in the first verse of the Psalms, followed by a reciting note (dominant) and a melodic extension called the mediation. This closes the first portion of the chant. The second begins with a reciting note (dominant again), and concludes with a melodic extension called the ending. Each of the tones has various endings. It is not necessary that the ending should close on the final, which, however, is always supplied by the antiphon which precedes and follows each canticle or psalm.

In addition to the eight principal tones others are sometimes used. The material being the same, the only difference lies in the notes taken as finals and dominants. As in all plainsong, the music is noted on a four-line staff with either the For the C clef, and for performance is transposed to any convenient pitch. See Ambrosian Chant.

Gregorovius, FERDINAND (1821-91). German historian. Born at Neidenburg, E. Prussia, Jan. 19, 1821, he was educated at Königsberg, and became a teacher. He passed much of his life, however, in Italy, and his great work is his History of Rome in the Middle Ages. Accurate, detailed and scholarly, this monumental work in many volumes traces the history of the city, and with it of the papacy, from about 400 to 1534 (Eng. trans. A. Hamilton, 1894-1900). Gregorovius wrote a number of other historical works, includ-



Ferdinand Gregorovius, German historian

ing a Life of the Emperor Hadrian (Eng. trans. R. Martineau, 1855), and some poems. He died at Munich, May 1, 1891.

Gregory. Salt lake of S. Australia. It lies between Lake Eyre and Lake Blanche in lat. 29° S. and long. 139° 10' E. Its length is 40 m., and maximum breadth 10 m.

Gregory THE ILLUMINATOR (c. 257-332). Apostle of Armenia and saint. Descended from the royal race of Parthia, his family were killed in revenge after his father, Anak, had assassinated the king of Armenia. The boy was educated as a Christian at Caesarea, and later returned to Armenia, probably about 290. He is said to have been imprisoned there for 14 years, and to have been released as a reward for healing King Terdat (Tiridates) of a disease. He later became the head of the Armenian Church, but gave up office in 331 and spent the rest of his life in a cave.

Gregory NAZIANZEN (c. 330-390). Saint and father of the Eastern Church. He was a native of Nazianzus, in Cappadocia, of which place his father became bishop. His mother was a woman of deep piety. He studied at the two Caesareas, Alexandria, and Athens, and had Julian, afterwards Roman emperor, for fellow student, and Basil for friend. He assisted his father at Nazianzus, was made bishop of Sasima, was elected bishop of Constantinople, and, one of the most eloquent orators of the early church, became famous for his defence of the Nicene faith and his opposition to Arianism and Apollinarianism. Jerome was one of his pupils.

His consecration as bishop of Constantinople took place in 381, but the Macedonian and Egyptian bishops contending that the canons of Nice limited a bishop to one diocese, he resigned and spent the rest of his life in his birthplace. His writings include letters, which abound in beautiful thoughts, poems, and 45 orations which won for him the title of Theologian. The best edition of his works is the Benedictine, Paris, 1778-1840. See memoir, C. Ullmann, 1825, Eng. trans. G. F. Coxe, 1857.

Gregory OF NYSSA. Greek saint and father of the church. Born at Caesarea about 331, the younger brother of S. Basil, who brought him up, he taught rhetoric for some years, after which he was ordained, and about 371 was appointed bishop of Nyssa in Cappadocia. In 375 he was deposed on a false charge of misappropriating church funds, three years later he was restored to his see, and took part in the Councils of Constantinople in

381 and 394. He probably died in 396. His numerous writings all dealt with theological and ecclesiastical questions.

Gregory OF TOURS (538-594). Frankish historian. Born at Clermont-Ferrand he was there educated and became a priest. In 573 he was made bishop of Tours, a position which gave him a standing in the Frankish realm. The civil wars of the time were constantly at his doors, but he seems to have been equal to most emergencies. He died, Nov. 17, 594. Gregory wrote in Latin several works, but only his History of the Franks is of any importance. The early part of this is mainly legend and tradition, but for the 6th century, when the author narrates contemporary or nearly contemporary events, it is perhaps the most valuable authority extant.

Gregory. Name of 16 popes. Gregory III, pope 731-41, was a Syrian whose reign was troubled by Lombard invasions. Gregory IV, a Roman pope, 827-44, was involved in the feuds of the Frankish emperor, Louis the Pious.

Gregory V, pope 986-99, the nominee of his cousin, the emperor Otto III, was the first German pope. Gregory VI received the papacy from his godson, the youthful profligate pope, Benedict IX, April, 1045, in exchange for a large sum of money. Benedict subsequently regretted his resignation, an anti-pope Sylvester III put in a claim, and the Roman clergy appealed to the German king, Henry III, to establish order. Benedict and Sylvester were banished, and a synod at Sutri, Dec. 1046, declared that Gregory had become pope through simony. Henry then arranged that a German, Clement II, should be elected pope, and Gregory resigned. He died in Germany early in 1048.

Gregory I CALLED THE GREAT (c. 540-604). Pope 590-604. Born at Rome, he was the son of Gordianus, a Roman patrician. About 574 he threw up a promising worldly career—he held the office of prefect of the city the previous year—to become a monk. His family estates in Sicily were given up for the foundation of monasteries, and his home on the Caelian Hill was converted into a religious house dedicated to S. Andrew, where Gregory lived in retirement for some years.

In 678 Pope Pelagius II ordained



Gregory the Great, Pope, 590-604

him one of the 7 deacons of the city, and the following year dispatched him on a special mission to Constantinople with the object of obtaining help from the emperor against the Lombards now actively threatening Rome.

On his return to Rome after six years' absence, he devoted himself to teaching and literary work; this period is also marked by the incident, related by Bede, of his meeting the English youths in the Forum which fired him with the project for the conversion of England. His original idea was to go himself, and he had actually started when the pope, to whom Gregory acted as confidential secretary, prompted by the Romans, sent urgent messages desiring his return. In 590 he became pope, and in 596 he sent Augustine to Britain. Gregory's remarkable gifts of management and organization were displayed in his scheme of relief for the needs of the refugees thronging Rome, no less than by the reorganization of the vast estates constituting the patrimony of the Church. He gave his name to that mode of plain chant (Gregorian) which, supplanting previous modes, became pre-eminently the music of the Church.

Gregory's Letters (collected in 14 volumes) are a witness to his unceasing labours in the supervision of the whole Church, not merely as a firm upholder of the supremacy of the papacy over East and West, but as overseer of local ecclesiastical affairs, the election to vacant sees, and the holding of local synods.

The first monk to become pope, Gregory's influence tended naturally to enhance the importance of the monastic system and to bring it into closer relationship with the Church. The action which placed Gregory at variance with the Byzantine emperor when the former took upon himself to arrange terms of peace with the Lombard chiefs, marks a distinct stage in that process by which the papacy arrived at temporal sovereignty.

The weight and influence lent to the papacy by Gregory's pontificate gained Gregory his title of Great. He was canonised by popular acclamation immediately after his death, March 10, 604, and ranks as a doctor of the Church. His festival is kept March 10, throughout the Roman Catholic Church. Gregory's special emblem in art is a dove which, according to the story, was seen sitting on his head as he dictated his Homilies. See Augustine; Papacy; consult also Pope Gregory the Great and his Relations with Gaul, F. W. Kellett, 1889; Gregory the Great, J. Barnby,

1892; Gregory the Great, His Place in History and Thought, F. H. Dudden, 1905.

Gregory II (d. 731). Pope 715-731. A Roman, of the Savelli family, he started his ecclesiastical career as a pupil in the papal *Schola Cantorum*. Under Sergius I (687-701) he was made subdeacon and papal almoner (*sacellarius*) and later papal librarian. After becoming pope he was visited by the Englishman Winfrid or Boniface, whom the pope authorised to preach to the heathen "on the right bank of the Rhine." Gregory II died Feb. 11, 731.



Gregory II,
Pope, 715-731

Gregory VII (c. 1025-85). Pope 1073-85. His name was Hildebrand, and he was born in Tuscany of obscure and, probably, humble origin. Educated at the Cluniac monastery on the Aventine Hill, Rome, where his uncle was abbot, he was created cardinal-deacon by Pope Leo IX, and administrator of the papal estates, where he proved the possession of those gifts of administration which distinguished his later rule.

Resisting the attempts of the Romans to make him pope on the death of Leo IX, he managed to secure the nomination of his candidate who became pope as Victor II in 1054. The latter was succeeded in 1057 by Stephen IX, who died while Hildebrand was engaged on an embassy to Germany. It had been the pope's wish that Hildebrand should succeed him, and he forbade an election to take place until after Hildebrand's return, but a faction seized the opportunity to set up a pretender, who assumed the title of Benedict X. The pseudo-pope was, however, disposed of by the prompt action of Hildebrand, whose own candidate again ascended the papal throne as Nicholas II.

A succession of German popes had tended to increase the imperial influence, particularly in the matter of elections to the papal throne, to a dangerous extent. A decree now promulgated vested the right of electing a pope in the college of cardinals, thus placing the appointment alike out of the power of the emperor no less than

out of that of the Roman patricians with their factions. On the death of Pope Nicholas in 1061, the malcontents among the Italian factions set up an anti-pope who, under the title of Honorius II, created a schism which lasted three years. Eventually Hildebrand's candidate prevailed and was enthroned as Alexander II.

The reform movement, meanwhile, continued to gain ground under Hildebrand, who, made archdeacon in 1059, was now created papal chancellor. At last on the death of Alexander, Hildebrand, who had guided the policy of no less than six popes, was chosen by popular acclamation, subsequently was canonically elected, and ascended the papal throne as Gregory VII. In accordance with some vague reference to the emperor's voice in papal elections, embodied in the decree of Nicholas II, he deferred consecration until notice of his election had received imperial acknowledgment; it was the last time that a papal election ever received imperial sanction.

Gregory's first care was thus to secure peace with secular authority in order to further the aims which he put forward at his first Lenten Synod held in Rome, March 1074. The reforms there promulgated, the abolition of simony, and the moral discipline of the clergy set forth in decrees involving clerical celibacy and continence, were intended as means only to an end, of which the uplifting and purifying of the clergy were necessary conditions.

The uproar created throughout Europe by the promulgation of these decrees did not deter Gregory, who followed them up by sending his legates over the country with authority to depose such of the clergy as should refuse to submit, and he enforced them still further by attacking the real root of the evil, i.e. lay investiture or the appointment to ecclesiastical offices by secular persons, an old abuse against which the reforming body in the Church had protested in vain. The decree of the synod which excommunicated any lay person, emperor or king, who should confer an investiture in connexion with any ecclesiastical office, brought the pope into collision with the whole secular force of Europe, while the interests involved and the personal character of the combatants embittered the struggle.

The emperor, Henry IV, who previously had confessed his misdeeds against the Church and promised amendment, was now summoned to appear before a council at Rome to answer for his conduct.



Gregory VII,
Pope, 1073-85
After Raphael

Henry's answer was to summon a meeting of his supporters at a great council held at Worms, January, 1076. Defending the emperor against the charges laid against him, they proceeded to depose the pope himself, this decision being announced to Gregory by letter in which the emperor addresses the pope as "Hildebrand, no longer Apostolic but a false monk."

Gregory responded by excommunicating the emperor at a synod in Lent (1076), deposing him and absolving his subjects from their allegiance. Henry, finding himself gradually abandoned by his partisans and faced with the possibility of the election of another emperor, felt compelled to submit, and hurried to Italy. The story of his three days' humiliation in the snow outside the walls of the castle of Canossa is well known.

Yet the triumph of Hildebrand was more apparent than real; at the price of an outward show of mortification Henry was able to obtain all he desired. He again incurred excommunication in 1080, but the death of one enemy, Rudolf of Swabia, elected by the German princes at the council of Augsburg in 1077 to succeed him, enabled him at last to concentrate all his forces on his greater enemy the pope. Having set up an anti-pope in the person of the excommunicated archbishop of Ravenna, who took the name of Clement III, he marched on Rome, where on March 21, 1084, he caused himself to be crowned by the pseudo-pope. Meanwhile Gregory, obliged to leave Rome, took refuge first at Monte Cassino, the great Benedictine monastery, and then at Salerno, where he died May 25, 1085. One of his last acts was to release from sentence of excommunication all his enemies except Henry and the anti-pope. Gregory VII was canonised by Paul VI in 1606. See Hildebrand and his Times, W. R. W. Stephens, 1898; Life and Times of Hildebrand, Pope Gregory VII, A. H. Mathew, 1910.

Gregory VIII (d. 1187). Pope in 1187. His name was Alberto di Morra, and he became a monk early in life. In 1155 he was made a cardinal, and in 1172 papal chancellor. In the same year he was one of the two legates sent to England by the pope to inquire into the circumstances attending the murder of Thomas Becket, and from him Henry II subsequently received absolution. His short pontificate, Oct.-Dec., 1187, was marked by steps for a reconciliation with the emperor Frederick I in order to present a united front to the Moslems under Saladin. He

died at Pisa, Dec. 17, 1187, whither he had gone with the object of making peace between the two rival seaports of Pisa and Genoa, on whom depended the naval and transport operations of the projected crusade.

Gregory IX (c. 1145-1241).

Pope 1227-41. Born at Anagni in the Campagna district, his name was Ugolino, Conte de Segni. Under his relative, Pope Innocent III (1198-1216), he was made a cardinal 1206, and in 1207-9 was legate on important diplomatic missions to Germany. By Pope Honorius III he was created plenipotentiary legate for Lombardy and was deputed to preach a new crusade to the Holy Land. Ugolino ascended the papal throne March 19, 1227, on the death of Honorius, and three days later summoned the emperor Frederick II, who had taken the cross on his coronation in 1220, to the fulfilment of his vow. This was the beginning of a struggle between the papacy and the empire, which lasted the whole of Gregory's pontificate, and only ended with the death of Frederick in 1250.

The emperor apparently complied with the summons, sailed from Brindisi in Sept., and returned in three days. The pope, distrusting his sincerity, launched on him sentence of excommunication, Sept. 27, 1227, but he could not prevail on the princes and bishops of Germany generally to acquiesce in the sentence which released them from their oath of allegiance to Frederick, and the publication of the ban in S. Peter's, Rome, so excited the Ghibellines that the pope fled from the city to avoid the violence of the mob.

The emperor, disregarding the sentence, continued his crusade, and wrote from Jerusalem, March 17, 1229, to announce the success of the expedition; the Holy City was once more in Christian hands, and Frederick crowned himself in the church of the Holy Sepulchre. His triumph seemed complete, but his position was intolerable. He abruptly left Syria and returned to Europe to find his opponent a fugitive at Perugia.

Gregory returned to Rome in Feb., 1230, and a peace between the two belligerents was concluded in July. But athwart the Hohenstaufen dream of universal domination lay the papacy, represented

by a figure as indomitable as Frederick himself, and trouble soon broke out. For a time the struggle was maintained by the Lombard League, which Gregory joined on the avowal of the emperor's intention to extend his empire over almost the whole of Italy, including the papal states. On March 20, 1239, Gregory again excommunicated Frederick, and later gave orders for a general council to assemble at Rome at Easter, 1241. But Frederick, who had defeated the league at Cortenuova, 1237, continued his progress in spite of a reverse before Brescia the following year, and effectually prevented the meeting by threats and violence. Advancing with his army, he was already within sight of Rome when news arrived that his opponent had died on Aug. 22, 1241.

In contrast with this struggle is Gregory's attitude towards the Mendicant Orders, whose rise is the prominent religious feature of the period. He was appointed Protector of the Friars Minor in 1220 at the special request of S. Francis, whom he canonised in 1228; and he was the friend and patron of S. Dominic. The pope sought in the Friars, as well as in the older orders, instruments for the conversion of the heathen in the remoter parts of Europe, in Asia, and in Africa. He made unsuccessful attempts to induce the Eastern Church to return to the unity of Christendom.

Gregory's special legislation, which withdrew heresy cases from secular jurisdiction and brought them before special tribunals on which members of the new religious Orders, and more particularly Dominicans, were appointed to sit, dates the medieval Inquisition as a creation of his pontificate.

Gregory X (1210-76). Pope 1271-76. Born at Piacenza, his name was Teobaldo di Visconti. He was elected pope Sept. 1, 1271, after a vacancy of nearly three years in the Holy See following the death of Clement IV. Gregory was not a cardinal, nor even a priest, when the choice of the cardinals at Viterbo fell upon him, and he was engaged at the time in an expedition to the Holy Land. Ordained priest six days after his entry into Rome, March 13, he was consecrated pope, March 27, 1272. Gregory's aims were peace for Europe, the reform of the Church, and the reunion of Christendom by the abolition of the Eastern Schism. In the cause of peace he endeavoured to reconcile the warring factions of Guelph and Ghibelline; he persuaded the German electors to choose a new emperor on the death (1272) of Richard of



Gregory IX,
Pope, 1227-41

Cornwall, and loyally supported their choice against rival claimants. In the interests of reform he summoned a General Council which met at Lyons, May, 1274, where he promulgated the new law of the Church for papal elections.

But the passion of Gregory's life was for the Holy Land and the kingdom of Jerusalem then tottering to its fall. His death (Jan. 10, 1276) put an end to his preparations for a fresh crusade and dissolved the new reunion of East and West. He received local veneration as a saint in Italy, where his feast is kept on Feb. 16.

Gregory XI (1331-78). Pope 1370-78. His name was Pierre Roger de Beaufort, and he was



Gregory XI,
Pope, 1370-78

created a cardinal at the age of eighteen by his uncle, Clement VI. On Dec. 30, 1370, he was elected pope. The seventh in succession of the Avignon popes, the most memorable act of his pontificate was the re-transference of the see to Italy. Beginning with plans for reform and reconciliation, he was forced to concentrate his efforts on quelling the rebellion of his own subjects. When Gregory laid Florence under a ban, the citizens sent S. Catherine of Siena to Avignon to intercede for them (June, 1376). She failed in her embassy, but induced the pope to return to Rome. Contrary to the advice of his court Gregory sailed for Italy, and made his formal entry into Rome, Jan. 17, 1377, thus ending the 70 years' exile. He died March 27, 1378.

Gregory XII (c. 1327-1417). Pope 1406-15. Angelo Corraro, or Correr, who as Gregory XII was recognized as rightful pope during the Great Schism (1378-1417), was born at Venice of a noble family, became bishop of Castello in 1380, and in 1405 cardinal.



Gregory XII,
Pope, 1406-15

He was elected to the papacy in succession to Innocent VII in 1406. Before the election each cardinal vowed that in the event of his own election he would abdicate his right provided that the anti-pope Benedict XIII would do the same.

The proposal to do this immediately after the election fell through, and subsequently the pope pro-

ceeded to make cardinals of the members of his own family, contrary to his promise to the conclave. The Council of Constance (1414-18) declared the deposition of all anti-popes and received Gregory's abdication, conferring on him the bishopric of Porta, which he held up to his death, Oct. 18, 1417.

Gregory XIII (1502-85). Pope 1572-85. Ugo Buoncompagno was born Jan. 7, 1502, at Bologna, at



Gregory XIII,
Pope, 1572-85

the university of which he studied and taught. Coming to Rome in 1539, he was employed successively by Paul III, Julius III, Paul IV, and Pius IV. He was sent by Pius IV, in 1559, in a confidential capacity to the Council of Trent, where he remained until it closed in 1563, and the following year was made cardinal. He was elected pope on the death of Pius V.

Faced with the loss to the Church of whole nations through Protestantism, Gregory sought a remedy in the building and endowing of colleges and seminaries for the training of propagandists and candidates for the ministry. Among the foundations built or endowed by him was the Jesuit College, Rome, an Order on which Gregory relied for missionary work in China, Japan, and India. An order was given by him for a Te Deum to be sung in Rome in celebration of S. Bartholomew's Day.

The most memorable act of his pontificate was his reform of the Julian calendar (*see* Calendar). Gregory's method of replenishing his treasury, depleted by his building schemes, by confiscating old properties the titles to which he claimed as lapsed, involved him in much trouble with his subjects. He died April 10, 1585.

Gregory XIV (1535-91). Pope 1590-91. The son of a Milanese senator, Niccolò Sfondrati, he was born Feb. 11, 1535, and educated at the universities of Perugia and Padua. In 1560 he was made bishop of Cremona, and cardinal in 1583. Elected pope in succession to Urban VII, by the advice of Philip II of Spain he joined the league against Henry IV of France. He died Oct. 15, 1591.

Gregory XV (1554-1623). Pope 1621-23. Alessandro Ludovisi was born at Bologna, studied at Rome under the Jesuits, and graduated at the university of his native city. Returning to Rome, he was ap-

pointed to various offices by successive popes, was made archbishop of Bologna in 1612 and



Gregory XV,
Pope, 1621-23

cardinal in 1616 by Paul V, whom he succeeded as pope in 1621. His pontificate was responsible for two decrees of importance, the first establishing a regular mode and ritual in the conduct of papal elections, the second constituting a special and permanent congregation for the control of foreign missions. He died at Rome, July 8, 1623.

Gregory XVI (1765-1846). Pope 1831-46. Mauro, or Bartolomeo Alberto Cappellari, born at



Gregory XVI,
Pope, 1831-46

Belluno in Venetia, Sept. 8, 1765, entered a Camaldolese monastery and became a priest. Sent to Rome, in 1800 he was made abbot of San Gregorio on the Coelian Hill. Forced during the Napoleonic troubles to retire from Rome, he returned thither on the fall of the emperor. In 1825 he was created cardinal.

His election to the papacy, Feb. 2, 1831, in succession to Pius VIII was the signal for an outbreak of revolution in the papal states which was only kept in check with the assistance of armed force from Austria. Gregory was wholly opposed to any measure of democratic control, and the Encyclical of 1832, rejecting the appeal of Lamennais, Lacordaire, and Montalembert, showed him equally unsympathetic to political liberation. He died June 9, 1846.

Gregory, AUGUSTA, LADY. Irish writer. The youngest daughter of Dudley Persse of Roxborough, co. Galway, she married Sir William Gregory, M.P. (d. 1892). Lady



Lady Gregory,
Irish author

Beresford

Gregory was an enthusiastic promoter of the Irish literary revival, and won a place among the playwrights of her time. *Cuchulain* of Muirtemne, 1902, and *Gods and Fighting Men*, 1904, are very

capable renderings of Irish sagas into the idiom of the Irish peasantry, into which she also translated three of Molière's plays, *The Kiltartan Molière*, 1910. Her own plays, produced by the Irish Literary Theatre, which she helped to found, include *Spreading the News*, *The White Cockade*, *The Rising of the Moon*, *The Workhouse Ward*, and *The Full Moon*.

Gregory, THOMAS WATT (b. 1861). American lawyer. Born in Missouri, Nov. 6, 1861, he was admitted to the Texas bar in 1885. Five years later he entered into partnership as Gregory & Batts, and the firm was employed in the prosecutions resulting from the application of the anti-trust laws. In 1913 he was appointed special assistant attorney-general in the prosecution of the New York, New Haven, and Hartford Railroad Co., and in 1914 became attorney-general in Wilson's cabinet.

Gregory's Powder. *Pulvis Rhei Compositus* or compound powder of rhubarb. It consists of rhubarb root, 22 parts; light magnesia, 66 parts; ginger, 12 parts. Dose 10 to 60 grains. It is a useful purgative for indigestion in children.

Greif. Armed German raider destroyed in the North Sea by a British armed merchant cruiser, Feb. 29, 1916. The Greif was stopped by the *Alcantara* when trying to steal through the British northern patrol disguised as a Norwegian merchantman. A boarding party was dispatched in a boat to overhaul her; thereupon the Greif dropped the screens that hid her guns and opened fire with her 6-in. weapons. A fight at point-blank range followed, which ended in the raider being sunk. Five officers and 115 men of her crew were picked up out of a complement of over 300. The *Alcantara* was also torpedoed and sunk. The British losses in the engagement were 5 officers and 69 men.

Greif, MARTIN. Pen-name of Friedrich Herman Frey (1839-1911). German poet. Born at Spiez, his life was uneventful, marked only by the appearance of his plays and poems, the former of which met with little success. *Gedichte*, a volume of lyrics, appeared in 1868. His principal plays were *Nero*, 1877; *Marino Faliero*, 1879; *Konradin*, 1889; *Ludwig der Bayer*, 1891; *Francesca da Rimini*, 1892; and *Agnes Bernauer*, 1894. The lyrics published in 1902, *Neue Lieder und Mären*, are full of grace and sentiment.

Greiffenhagen, MAURICE WILLIAM (b. 1862). British painter. Born in London, Dec. 15, 1862, of a Russian father and an English

mother, he studied at the R.A. schools, and for several years practised black and white work with great success. In 1906 he was appointed headmaster of the Life branch of the Glasgow School of Arts, and in 1916 was elected A.R.A., and R.A. in 1922.

Greifswald. Town of Germany, in the Prussian prov. of Pomerania. It stands 2 m. from the mouth of the Ryckgraben, 20 m. S.E. of Stralsund. It was a member of the Hanseatic League. The university, founded in 1456, possesses the famous Croy tapestry which is exhibited once in 10 years, whose subject is Luther preaching before the royalties of Saxony and Pomerania. Greifswald became Prussian in 1815. There are some good gabled houses, and the church of S. Nicholas (1300-26) has a notable tower 330 ft. high. Pop. 24,679.

Greisen. Cornish rock consisting of quartz and mica. It is a variation of the granite in which it occurs, being recrystallised granite in which the felspar has been replaced by quartz and mica. It is found where tin ores are abundant.

Greiz. Town of Germany, in Thuringia, formerly the capital of the principality of Reuss-Greiz (or elder branch). It stands on the White Elster, 50 m. S.S.W. of Leipzig. The river cuts the town in two, the new town being on the left bank and the old town on the right. Notable features are an old castle built on an eminence overlooking the town, two handsome palaces, formerly the residences of the prince of Reuss, a university, several churches, government buildings, and a 19th century Gothic town hall. Greiz is a centre of the textile industry, with extensive railroad shops. Pop. 23,245.

Grenada. Island of the W. Indies, in the Caribbean Sea, belonging to Great Britain. It is the southernmost of the Windward group, which forms a united colony 86 m. due N. of the W. end of the island of Trinidad. Area, 133 sq. m. Grenada is one of the most beautiful islands of the W. Indies, with diversified scenery, a delightful climate, and exceedingly fertile soil suitable for the raising of tropical produce.

Of volcanic origin, a wooded range of mountains, reaching an elevation of 2,751 ft. in St. Catherine's Mt., traverses the island from N. to S. It includes several extinct volcanoes, whose craters are now lakes, the chief of which

are the Grand Étang and Lake Antoine. There are numerous small rivers, besides hot mineral springs. One-fourth of the area is under cultivation, and agriculture is the principal occupation.



Grenada. Map of the West Indian island in the Caribbean Sea

The chief products are cacao, coffee, sugar, rum, nutmegs, mace, cotton, cotton seed, arrowroot, hides, timber, and turtles, most of these being exported. The raising of sugar-canes, formerly the most prominent industry, has been superseded by that of cacao. There are four hospitals and two asylums. The roads are good, the rainfall abundant, and there is steamer communication with the neighbouring ports and islands.

St. George's, the capital and the seat of the governor of the Windward Islands, is built on a peninsula and has an excellent harbour, nearly landlocked; it is an important coaling station. Other towns are Charlotte, Sauters, and Grenville. Grenada is administered by a legislative council, with a governor assisted by six official and seven unofficial members, who serve for six years.

Discovered by Columbus on Aug. 15, 1498, it was settled by the French—the natives still speak a French *patois*. Captured by the English in 1762, it was retaken by the French in 1779, and finally restored to Gt. Britain in 1783. In 1795 the French landed troops on the island, causing an insurrection, which was not quelled until the following year. Pop. 71,567, of whom 2 p.c. are whites.

Grenade (Lat. *granatus*, filled with grains; Span. *granada*, pomegranate). Small missile containing an explosive charge, frequently termed bomb. A kind of grenade was used to a considerable extent during the 15th century. It was



Grenada arms

filled with gunpowder and generally made of earthenware, afterwards of brass. The fuses were very primitive and uncertain. In the 17th century the fuse problem was fairly well solved. This development reached its zenith towards the end of the 18th century, after which grenades fell into disuse until the Russo-Japanese War, when there was a revival. The Great War brought the weapon into prominence again, many varieties being introduced, and leading to the use of the trench howitzer. See Ammunition; Battyé Grenade; Besozzi Grenade; Bomb; Egg Grenade; Hand Grenade; Rifle Grenade; Stick Grenade; Stokes Gun.

Grenadier. Literally, a soldier who throws a grenade. They appeared first in the 17th century, the early custom being for each regiment to have its company of grenadiers. The French led the way, their example being soon followed in England and elsewhere; in England soon after the formation of the standing army each battalion had its grenadier company. The grenadiers were picked men, and this company was usually regarded as the leading one in a regiment, taking the place of honour on parade.

The next step was to form these companies into battalions. This was done in France and Prussia more than it was in England, and from it arose the regiments that now bear the name. After a time the grenade fell into disuse, and soon after 1850 grenadier companies ceased to exist in the British regiments. The grenadier's special head-dress was a pointed cap of embroidered cloth, having peaks and flaps; or a loose fur cap similar in shape.

In 1915 some controversy was aroused by a proposal to give all bomb-throwers in all regiments the title of grenadiers. The regiment protested, and the matter was referred to King George V, with the result that by an army order of March, 1916, it was stated that "The term 'grenadier' will no longer be applied to men trained or employed in the use of hand-grenades. Such men will in future be designated 'bombers.'" See Trench Warfare.

Grenadier Guards, THE. Regiment of the British army. Raised in 1660 by Colonel Russell, it became the bodyguard of Charles II. The premier, though not the oldest, regiment of the Foot Guards, the Grenadier Guards have had a distinguished history. They fought under William of Orange, and were engaged in the four great victories of Marlborough, who was at one

time their colonel. They greatly increased their reputation at Fontenoy, and two of their battalions

were with Sir John Moore in the retreat from Corunna, while another suffered terrible losses in the battle of Barossa. Two battalions of the Grenadiers lost over 1,000 men at Quatre Bras and Waterloo. After the latter battle the Prince Regent bestowed upon them the title of the first or Grenadier Regiment of Foot Guards. Later distinguished services include the campaigns of the Crimea, Egypt, and S. Africa.



Grenadier Guards.
Private in parade
uniform

In the Great War the Grenadier Guards had four battalions in the field in France, which at first were in different brigades and, for a time, in different divisions. In Sept., 1915, the battalions were brought together and their history was thenceforth that of the Guards Division.

During four years of war the regiment sustained casualties 11,915 officers and men, made up as follows: officers, 203 killed, 242 wounded, 2 missing; men, 4,508 killed, 6,939 wounded, 21 missing. Seven V.C.'s were won by the regiment.

With the Scots and Coldstream Guards the Grenadiers have the privilege of guarding the royal palaces and the Bank of England and marching through the City of London with fixed bayonets. See Army: colour plate; consult The Grenadier Guards in the Great War of 1914-18, Sir F. Ponsonby, 1920.

Grenadines. Cluster of small islands and islets in the Caribbean Sea, belonging to Gt. Britain. They lie between St. Vincent and Grenada in the W. Indies. Apportioned administratively between St. Vincent and Grenada, the largest is Carriacou, which is attached to Grenada, and contains most of the population. Cattle raising and cotton growing

are the principal occupations. Only three of the islands are inhabited, but the soil is fertile. Area, 14 sq. m. Pop. 6,886.

Grenfell. Town of New South Wales, in Forbes co. It stands in a plain E. of Mt. Berabidgal, 180 m. due W. of Sydney. Pop. 1,050.

Grenfell. Town of New South Wales, Australia, in Mounteagle co. It is the terminus of a branch line from Koorowatha on the main line from Sydney to Melbourne. It stands 286 m. W.S.W. of Sydney, on the western slopes of the mountains from Gundagai through Forbes to Narromine. Pop. 3,007.

Grenfell, FRANCIS WALLACE GRENFELL, 1st BARON (1841-1925). British soldier. Born April 29, 1841,

he was the son of Pascoe St. L. Grenfell, and entered the 60th Rifles in 1859. In 1878 he served in the Kaffir War; in 1879 in the Zulu War, and in 1881-82 in the Transvaal. His connexion with Egypt began in 1882; in 1884 he was with the force that went up the Nile, and in 1885 he was made sirdar of the Egyptian army. In 1886 he commanded the frontier field force at Ginnis, and in 1888-89 the expedition that fought at Suakin and Toski. From 1894-97 he was inspector-general of auxiliary forces at home. In 1897-98 he commanded the British troops in Egypt, and from 1899-1903 was governor and commander-in-chief at Malta. He commanded the 4th Army Corps 1903-4, and was commander-in-chief in Ireland 1904-8. In 1886 Grenfell was knighted. Made a baron 1902 and in 1908 a field-marshal, he died Jan. 27, 1925.

Grenfell, BERNARD PYNE (b. 1869). British archaeologist. Born at Birmingham, Dec. 16, 1869, and educated at Clifton College and Queen's College, Oxford, he began exploration work in Egypt in 1894. In company with A. S. Hunt he



Bernard P. Grenfell,
British archaeologist
Russell

discovered at Behnesa in 1896-97 and 1905-6 immense hoards of Oxyrhynchus papyri. He was appointed professor of papyrology at Oxford in 1908, and made honorary professor in 1916. Grenfell and Hunt have published jointly papyri



1st Baron Grenfell,
British soldier
Russell

from *Oxyrhynchus*, Tebtunis, Hibeh, and other finds. The *Sayings of Our Lord*, 1897; and *New Sayings of Jesus*, 1904, were issued separately.

Grenfell, FRANCIS OCTAVIUS (1880-1915). British soldier. The eighth son of Pascoe Du Pré



Francis Grenfell,
British soldier

Grenfell, he was born Sept. 4, 1880, and educated at Eton, where with his twin brother Riversdale ("Rivy") he was noted for excellence in sports. He joined the 3rd battalion Seaforth Highlanders (Militia) in 1899, transferring in 1901 to the King's Royal Rifles, with which regiment he served in the S. African War.

In 1905 he joined the 9th Lancers, which regiment he accompanied to France in August, 1914, with the rank of captain. Grenfell was one of the first officers to gain the V.C. in the Great War, which was awarded to him for gallantry on Aug. 24, 1914, in action against the unbroken Germans at Audrenghies, and on the same day assisting to save the guns of the 119th Battery, R.F.A., near Doubon. Grenfell, after being twice invalided home, was killed in the Ypres salient on May 24, 1915.

By his will, dated May 6, 1915, he bequeathed his Victoria Cross to his regiment. Capt. Grenfell was a noted polo player. Riversdale Grenfell was killed in action, Sept. 14, 1914. See Francis and Riversdale Grenfell, John Buchan, 1920.

Grenfell, JULIAN HENRY FRANCIS (1888-1915). British soldier and poet. The eldest son of Lord Desborough, he was born March 30, 1888. Educated at Eton and Balliol College, Oxford, he proved himself both a fine soldier and a fine athlete. He excelled at several sports, but especially at boxing, in which he represented Oxford and the army. In 1909 he entered the Royal Dragoons, with which he went to the front early in the Great War. He had won the D.S.O., when on May 13, 1915, he was seriously wounded, and on the 26th he died in hospital at Boulogne. Grenfell is chiefly known by the



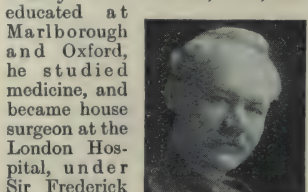
Julian Grenfell,
British soldier
Maull & Fox

verses, *Into Battle*, which appeared in *The Times* a few days before his death.

Lord Desborough's younger son, Gerald William Grenfell (1890-1915), was killed in action at Hooge, July 30, 1915, while serving with the Rifle Brigade. Both at Eton and Oxford, where he was a scholar of Balliol, he had distinguished himself as a classical scholar, while he represented his university at boxing and tennis.

Grenfell, WILFRED THOMASON (b. 1865). British medical missionary. Born Feb. 28, 1865, and educated at Marlborough and Oxford, he studied medicine, and became house surgeon at the London Hospital, under Sir Frederick Treves. Being interested in the North Sea fishermen, he fitted out the first hospital ship, and established land missions and homes for their use. In 1892 he went to Labrador, built four hospitals, and started various institutions for the fishermen. He was made an honorary fellow of the American college of surgeons in 1915, and was a major in the Harvard surgical unit in France during the Great War. His many books on his missionary work among the fishermen include the autobiographical *A Labrador Doctor*, 1918.

Grenoble. City of France, in the dept. of Isère, the old capital of Dauphiné. It stands on the Isère, 75 m. S.E. of Lyons, and is beautifully situated at the foot of Mont Rachais. The chief buildings are the cathedral of Notre Dame, partly of the 11th century; the church of S. André, with its monument to Bayard; and the old church of S. Laurent. Secular edifices include the palais de justice, the library, with a fine collection of manuscripts, books, and paintings, and the university. It is a river port, and is noted for its manufacture of gloves. The city is an old one, having existed under the Franks, and earlier. It was part of Provence before becoming part of France, and as the chief town of Dauphiné was an important place, retaining certain privileges until the Revolution. Pop. 77,500.

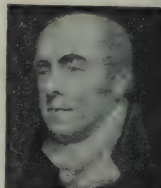


Wilfred T. Grenfell,
British medical
missionary
Elliott & Fry

Grenville, WILLIAM WYNDHAM GRENVILLE, BARON (1759-1834). British statesman. Born Oct. 25, 1759, he was the youngest son of George Grenville. Educated at Eton and Christ Church, Oxford, he entered Parliament as M.P. for Buckingham in 1782. His family connexions made his way easy, and having for a short time been secretary to his brother, Earl Temple, lord-lieutenant of Ireland, he became paymaster-general under Pitt in 1783. In 1786 he was made vice-president of the committee on trade; in 1789, having been for a few months speaker, he became home secretary, and in 1791 foreign secretary. He had been a peer since 1790.

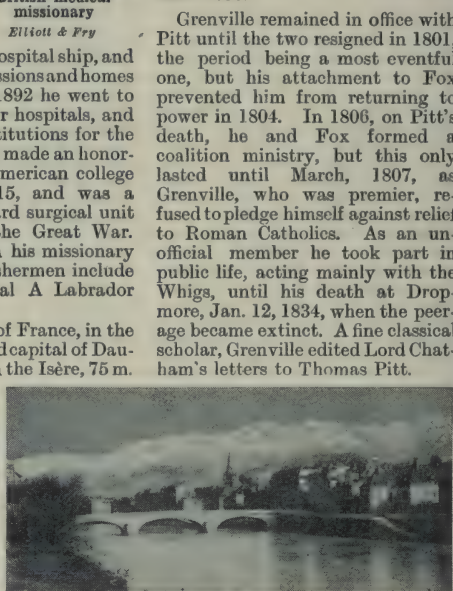
Grenville remained in office with Pitt until the two resigned in 1801, the period being a most eventful one, but his attachment to Fox prevented him from returning to power in 1804. In 1806, on Pitt's death, he and Fox formed a coalition ministry, but this only lasted until March, 1807, as Grenville, who was premier, refused to pledge himself against relief to Roman Catholics. As an unofficial member he took part in public life, acting mainly with the Whigs, until his death at Dropmore, Jan. 12, 1834, when the peerage became extinct. A fine classical scholar, Grenville edited Lord Chatam's letters to Thomas Pitt.

Grenville, GEORGE (1712-70). English statesman. Born Oct. 14, 1712, he was educated at Eton and Christ Church, Oxford, was called to the bar in 1735, but adopted a political career, and from 1740 till his death sat for the borough of Buckingham in the House of Commons. He was made a lord of the admiralty in 1744 and of the treasury in 1747; treasurer of the navy, and a privy councillor in 1754, and secretary of state for the northern department, and first



Grenville
After J. Jackson, R.A.

Grenoble, France. Pont d'Hôpital over the Isère. Behind the city lie the snow-covered French Alps.

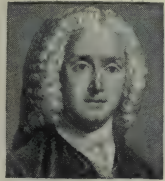


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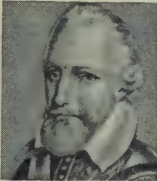
lord of the admiralty in 1762. He was prime minister from 1763-65, his administration being chiefly notable for the prosecution of John Wilkes, in 1763, and the passing of the American Stamp Act in 1765. He was known as "The Gentle Shepherd," a nickname due to Pitt's quoting the words of the old song, "Gentle shepherd, tell me where," when Grenville was wearying the house with complaints. Grenville died in London, Nov. 13, 1770.



George Grenville,
English statesman

the words of the old song, "Gentle shepherd, tell me where," when Grenville was wearying the house with complaints. Grenville died in London, Nov. 13, 1770.

Grenville OR GREYNVILLE, SIR RICHARD (c. 1541-91). English sailor. Belonging to an old Cornish family, in his youth he is reported to have fought with distinction in the Austrian service against the Turks in Hungary. He was one of the members for Cornwall in the parliaments of 1571 and 1584, and was sheriff of the county in 1571.



Sir Richard Grenville,
English sailor

In 1591 Grenville was appointed vice-admiral, or second in command, under Admiral Sir Thomas Howard, of a squadron sent to the Azores to intercept the homeward bound Spanish treasure fleet. Spain had, however, learned of the dispatch of this squadron, and sent a fleet of 53 vessels to the Azores, where they arrived, Aug. 31. Howard's fleet, anchored north of Flores, numbered only 16, and at least half his men were sick with scurvy, so he hurried his men aboard, and put to sea.

For some reason the *Revenge*, Grenville's flagship, was unable to follow, and was cut off. Grenville thereupon determined to pass through the Spanish line; he made a dash, but was becalmed under the lee of the enormous galleons, whose men boarded her, and after a fierce fight captured and overwhelmed the few survivors of her crew. Mortally wounded, Grenville was taken aboard the Spanish admiral's flagship, where he died a few hours later. For fifteen hours 150 men had fought hand to hand against 5,000 Spaniards, and it was not until their number was reduced to 20 that they yielded. The story is finely told in Tennyson's poem, *The Revenge*.

Gresham. British life assurance company. It was established in 1848, and registered as a limited company, 1893. Its head offices are 5, St. Mildred's House, Poultry, E.C.

Gresham, SIR THOMAS (c. 1519-79). English merchant and financier. Born in London, second son of Sir Richard Gresham (d. 1549), lord mayor of London in 1537, and an ancestor of the marquess of Bath, he came of an old Norfolk family. Educated at Gonville Hall, now Gonville and Caius College, Cambridge, and a student at Gray's Inn, he joined the Mercers' Company, and amassed a fortune.

Knighted by Queen Elizabeth, he acquired lands in Norfolk and Suffolk, and had mansions at Mayfield, in Sussex, and Osterley, in Middlesex. He was lamed for life by a fall from his horse in 1560, and lost his only son in 1564, and, deciding to devote his wealth to public ends, carried out, in 1566-68, a project of his father's by founding the Royal Exchange. He died, Nov. 21, 1579, and was buried in St. Helen's Church, Bishopsgate.

He bequeathed one moiety of the Exchange to the city corporation, the other to the Mercers' Company, in trust for the foundation of the Gresham Lectures. He



Sir Thomas Gresham, English merchant
After Holbein

left his house in Bishopsgate Street for the use of the lecturers, founded eight almshouses, and left money for other charities. See *Life and Times of Sir Thomas Gresham*, J. W. Burgon, 1839.

Gresham College. Educational centre in London. It was originated by Sir Thomas Gresham (q.v.), who left his residence in Bishopsgate Street to the corporation of the city of London and the Mercers' Company, for the purpose of starting lectures in various subjects. In 1597 the lectures were organized and begun,



Gresham College,
arms



Gresham College. The courtyard of Sir Thomas Gresham's house in which Gresham College was started

From an old print

and they have been continued ever since. There are seven lecturers, and each delivers twelve lectures a year. They are on divinity, astronomy, music, geometry, law, physics, and rhetoric.

Gresham's Law. Economic law that may be roughly stated as "bad money drives out good." It was first expressed thus in a document of 1560, dealing with the proposed reforms of the coinage, but its present name was only given by H. D. Macleod, in 1858, in the belief that Sir Thomas Gresham was responsible for the statement made in the above proclamation. The truth of the law is amply proved by experience. Where there are two forms of currency, each being legal tender, persons will naturally pay their debts in the less valuable one, retaining any of the more valuable one they may have, which thus will tend to disappear from circulation. The existence of this law is a strong argument against bimetalism (q.v.).

Gresset, JEAN BAPTISTE LOUIS (1709-77). French poet and dramatist. Born at Amiens, Aug. 29, 1709, he is remembered chiefly for one capital comedy, *Le Méchant*, and a burlesque poem, *Vert-Vert*, which contains beneath its humorous story of a convent parrot some shrewd satire on monastic life. He died at Amiens, June 16, 1777.

Grès Ware. Variety of stoneware. The finer qualities are made of a mixture of clay, quartz sand, lime or barytes. Cologne grès was celebrated. *Pron.* gray.

land. Owing to its situation close to the English border, it was convenient for runaway marriages, as here couples from England could take advantage of the Scottish

until 1856, when an Act made residence in Scotland for, at least, 21 days necessary in the case of one of the parties. On the English side of the Sark is the village of Gretna,



Greta Hall, Cumberland, the home of Robert Southey for forty years
Abraham. E.

Greta. River of Cumberland. It is a tributary of the Derwent, which it joins near Keswick. Its length is 4 m. Overlooking it is Greta Hall, where Southey lived from 1803 until his death in 1843, and Coleridge from 1800 to 1809. There are two rivers of this name in Yorkshire. One is a tributary of the Tees, while the other rises near Ingleton and falls into the Lune.

Gretna. Munitions centre during the Great War. In 1915 a cordite factory was opened near to the village of Gretna Green. Here a munition-making township sprang up on a site which had hitherto been bare farmland. The workers numbered ultimately about 16,000. Huts for their accommodation were erected, and clubs, refreshment rooms, and other buildings established. The total capital expenditure on building and equipment was £9,230,143, the working cost £14,846,697, and the value of the cordite produced £16,690,246.

In 1920 it was decided to maintain Gretna as a centre for the manufacture of explosives, and to use, if possible, a part of its ether plant for the conversion of alcohol to ether, and the treatment of the ether alcohol recovered. *See* Munitions.

Gretna Green. Village of Dumfriesshire, Scotland. It is 9 m. N.W. of Carlisle, near the little river Sark that divides England from Scot-

land. marriage laws. The marriages were usually celebrated by the blacksmith or innkeeper in his smithy or



Gretna Green. The smithy where formerly clandestine marriages were celebrated

inn. The practice flourished from 1770, when an Act made hasty marriages more difficult in England,



Greuze. *Psyche*, the picture formerly called *Sorrow*, painted in 1786
Wallace Collection



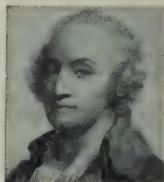
Gretna Green in war time. The munition-making township in which 16,000 workers were housed in huts

with stations on the Cal. and Glasgow and S.W. Rylys. Pop. 1,200.

Gretna Tavern. Model public house near Carlisle, England. It was the first started by the Central Control Board in July, 1916. *See* Carlisle; Central Control Board.

Grétry, ANDRÉ ERNEST MODESTE (1741-1813). Belgian composer. Born at Liège, Feb. 8, 1741, he became a chorister in a church there and when quite young produced some symphonies. For seven years he studied in Rome, and afterwards, on the advice of Voltaire, settled in Paris, where he passed the greater part of his life. Grétry devoted himself almost entirely to the composition of comic operas, upon the form of which he exercised considerable influence, but he also wrote some church music. In France he became the most popular composer of his day. He died Sept. 24, 1813.

Greuze, JEAN BAPTISTE (1725-1805). French painter. Born at Tournus, near Mâcon, Aug. 21, 1725, he studied under Charles Grandon (1691-1762) of Lyons. His first exhibited picture, *A Father Expounding the Bible to his Family*, gave promise of a highly successful career, and in 1755 his *Blind Man Duped* secured his election to the Academy. A sojourn in Italy modified his style to some extent,



Greuze

but on returning to Paris he resumed his work in genre. In 1769 he submitted his *Severus Reproaching Caracalla*, a poor production in what was meant to be the historical mode, and though the Academy now admitted him, he was only classed with painters of genre.

He suffered heavy pecuniary losses during the Revolution, and with the Directorate a complete change in the prevailing taste for art took place. But the naïve simplicity of his most charming pictures, sustained by accurate drawing and careful colouring, and tenderly painted, has outstayed the tawdry theatricality of the Neo-Classicalists, and often his works command enormous prices, while those of his deriders seldom find a purchaser. He died in poverty in Paris, March 21, 1805.

Greville, CHARLES CAVENDISH FULKE (1794-1865). British diarist. Born April 2, 1794, he was



Greville

a member of the family of the earl of Warwick, and a grandson, through his mother, of the duke of Portland. Educated at Eton and Christ Church, Oxford, his connexions secured for him the position of secretary of Jamaica, a non-resident sinecure. In 1821 he became also clerk of the privy council, and there he remained until 1859. He kept a diary throughout his official career, this containing some very valuable material. The first part of it was published in 1875, a preface being contributed by his friend Harry Reeve. The whole, known as *The Greville Memoirs*, appeared in seven volumes between that date and 1887. Greville's comments on royal personages are remarkably frank, so much so that some passages in the first volumes were suppressed. He died Jan. 18, 1865. Greville's brother Harry (1801-72) also kept a diary, of which *Leaves* appeared in 1882-84.

Gréville. Village of France, in the dept. of Pas-de-Calais. It lies on the Albert-Bapaume road 1½ m. S.W. of the latter, and just N.E. of Loupart Wood (*q.v.*). It was taken by the British on March 13, 1917. Retaken by the Germans in their offensive of March, 1918, it was recaptured by the British during the advance in Aug., 1918. See *Ancre*, *Battle of*; *Somme*, *Battle of the*.

Grévy, FRANÇOIS PAUL JULES (1807-91). President of the French Republic, 1879-87. Born at Mont-



F. P. J. Grévy,
French president

sous-Vaudrey, Jura, Aug. 15, 1807, he was a strong republican while a law student in Paris. After the revolution of 1848 he was elected deputy in the constituent assembly, sitting also in the legislative assembly, 1849-51, when, opposed to the *coup d'état* of Napoleon III, he returned to the bar. Under the third republic, he was president of the national assembly, 1871-73, and of the chamber of deputies, 1876-79.

Grévy succeeded MacMahon as president of the republic, Jan. 30, 1879. Although his signature of peace with China, June, 1885, made an inconclusive end to French difficulties in Tongking, and in home affairs his record lacked any striking distinction, he was re-elected for a further seven years, Dec., 1885. But his reputation was severely damaged by revelations of his son-in-law's (Daniel Wilson) trafficking in honours and offices, and he resigned Dec. 2, 1887. He died at his birthplace, Sept. 9, 1891.

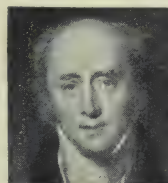
Grew, NEHEMIAH (1641-1712). English botanist. The son of a clergyman at Coventry, he was educated at Cambridge, but took his degree as a doctor of medicine at Leiden. In 1672 he began to practise in London, and soon had a large connexion, but his best work was done as a student of botany. His researches were embodied in his *Anatomy of Vegetables*, begun 1672, and his *Anatomy of Plants*, 1684, and to him and Malpighi are due the foundations of our knowledge of plant anatomy. He was secretary of the Royal Society from 1677 until his death, March 25, 1712. A genus of trees, *Grewia*, is named after him.

Grey or GRAY. Colour prepared by mixing black and white pigments so that neither colour predominates. Grey bark is a variety of cinchona bark which has a silvery-grey lichen growing upon the outer surface.

Grey, EARL. British title borne by the family of Grey since 1806. The family had long been living in Northumberland when, in 1746, Henry Grey was made a baronet. His eldest son succeeded to the baronetcy, but a younger son, Charles (1729-1807), was more distinguished. He served in the army, being wounded at Minden, and fought with distinction in the

War of American Independence. He was made a general and was knighted. In 1801 he was created Baron Grey, and in 1806 an earl. From him the later earls are descended, as is also Viscount Grey of Fallodon. The earl's seat is Howick House, Lesbury, and his eldest son is known as Viscount Howick.

Grey, CHARLES GREY, 2ND EARL (1764-1845). British statesman. Born at Fallodon, Northumberland,



Grey
After Laurence

Mar. 10, 1764, he was the eldest son of the soldier who became the 1st Earl Grey. Educated at Eton and King's College, Cambridge, he entered Parliament in 1786 as M.P. for Northumberland and soon associated himself with Fox and the Whigs. His first experience of office was in the coalition ministry of 1806-7, in which he was first lord of the admiralty and then foreign secretary.

The successor of Fox as the leader of the Whigs, Grey, who in 1807 succeeded to his father's title, did not greatly distinguish himself in opposition during the long period of Tory ascendancy that ended in 1830. However, when the Whigs were returned to power in 1830, his dignified presence, his stately eloquence, his unblemished character, and his parliamentary experience marked him out as the only possible premier. His ministry was responsible for the great Reform Act; Grey conducted the negotiations with the king, and after handing in his resignation secured the promise that forced the measure through the House of Lords. He remained in office when the reformed parliament met, but serious differences in the ministry led to his resignation in July, 1834. He died at Howick, July 17, 1845. The correspondence between Grey and William IV over the Reform Bill was edited by his son, the 3rd earl, 1867. See also Lord Grey of the Reform Bill, G. M. Trevelyan, 1920.

Grey, HENRY GEORGE GREY, 3RD EARL (1802-94). British politician. The eldest son of the 2nd earl, he was born Dec. 28, 1802. Educated at Eton and Trinity College, Cambridge, he entered Parliament in 1826, and in 1830 became under-secretary for the colonies in his father's ministry. From 1835-39 he was secretary for war, and in 1846 he became colonial secretary, retaining that post until 1852.

Thenceforward out of office, he remained, however, an active figure in public life, and his age did not prevent him from strongly opposing Home Rule. He died at Howick, Oct. 9, 1894, his successor being his nephew Albert. He wrote several books on political questions, one being a defence of his colonial policy.

Grey, ALBERT GEORGE GREY, 4TH EARL (1851-1917). British administrator. Born in St. James's



4th Earl Grey,
British administrator
Russell

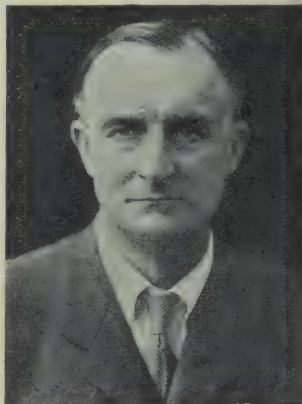
Palace, Nov. 28, 1851, the son of General Charles Grey, private secretary to Queen Victoria, he was educated at Harrow and Cambridge. He was M.P. for St. Northumberland 1880-85, and Northumberland (Tyneside) 1885-86. A great traveller, he was in S. Africa in 1894 when his uncle died, and he succeeded to the earldom. He became administrator of Rhodesia in 1896, and was a director of the South African Company, 1898-1904. From 1904 to 1911 he was governor-general of Canada. On his return to England, Earl Grey threw himself into public work with zest, two of his chief projects being Dominion House, and the Public House Trust. He was also keenly interested in agricultural reform, and worked for an Irish Convention. He died Aug. 29, 1917. See Albert, Fourth Earl Grey: A Last Word, Harold Begbie, 1917.

Grey of Fallodon, EDWARD, 1ST VISCOUNT (b. 1862). British statesman. Born April 25, 1862, he belonged to the family of which Earl Grey was the head. He was educated at Winchester and Balliol College, Oxford, and in 1882, having lost his father, Lieut.-Col. G. H. Grey, he succeeded his grandfather, Sir George Grey, the Liberal politician, in the family baronetcy and estates, the former dating from 1814. In 1885 he was returned to Parliament as Liberal M.P. for Berwick-on-Tweed, and his connexions brought him to the notice of Gladstone, who is reported to have predicted for him a great political future. He had not, however, taken any prominent part in debate when, in 1892, he was made under-secretary for foreign affairs, an office in which he acquitted himself well for three years.

During the ten years in opposition the Liberals began to look upon Grey as one of their leaders, and the South African War gave him a cer-

tain prominence. In 1905 Campbell-Bannerman chose him as foreign minister. In that office he remained for eleven years, but all he did in the first eight was dwarfed by his activities in 1914.

It fell to him to conduct the last negotiations with Germany, and those with France, in July and



Russell

See, not.

August, 1914, and to explain the British position to the House of Commons and the country. Certainly in those days he strove hard for peace, and his case at the moment was so convincing that he had no difficulty in committing Britain to the struggle with the full assent of the people. He remained in office, quietly discharging his duties, during the earlier part of the war, and also after the Coalition government was formed; but in Dec., 1916, he resigned with Asquith. Already a K.G., an unusual honour for a commoner, an earldom was conferred on him July 6, 1916, which at his request was altered to a viscounty. In 1919 his eyesight became impaired, but it improved later. His first wife died in 1906, and in 1922 he married Lady Glenconner. In early life he was a fine tennis player, and throughout fly-fishing, on which he wrote a book, was his main hobby. His residence, Fallodon Hall, was burned down in April, 1917.

Grey had many of the characteristics of his lifelong friend, Asquith. Personally of the most scrupulous honour, he was yet rather inclined, in the face of difficulties, to take the line of least resistance. His strong position with the Liberals was due to an appearance of strength, to a certain dignity and reserve, especially in speech, and still more to a constant and obvious indifference

to office. All recognized him as a patriot and a gentleman, although not a statesman of the type of Pitt. See The Foreign Policy of Pitt. E. Grey, Gilbert Murray, 1915.

A. W. Holland

Grey, SIR GEORGE (1799-1882). British politician. A son of Sir George Grey and a grandson of Charles, 1st Earl Grey, he was born at Gibraltar and educated by a tutor and at Oriel College, Oxford. He became a barrister, and in 1832, as a Whig, entered the House of Commons for Devonport. From 1847 to 1852 he represented N. Northumberland, and from 1853 to 1874 Morpeth. In 1834 and between 1835-39 Grey was under-secretary for the colonies. In 1841 he was for a short time chancellor of the duchy, and when the Liberals came into office in 1846 he was appointed home secretary. He held that post during the troubles of 1848, leaving office in 1852. After a brief term as colonial secretary he returned to the home office in 1855 and was there until 1858 and again from 1861 to 1866. He died at his residence, Fallodon, Sept. 9, 1882.

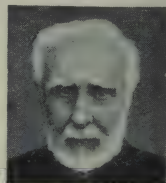
Grey, SIR GEORGE (1812-98). British administrator. Born at

Lisbon, April 12, 1812, son of an officer killed at Badajoz, he was educated at Sandhurst. In 1829 he took up a commission in the 83rd Foot, but retired from the army in 1839 with the rank of captain. He took part in 1836 and 1839 in two adventurous expeditions along the N.W. coast of W. Australia and along the N. and S. coast-line of Shark's Bay. He was governor of S. Australia, 1841-45; of New Zealand, 1845-53, and 1861-67; of Cape Colony, 1853-60; and prime minister of New Zealand, 1877-84. He was made a K.C.B. in 1848, lived in London after 1894, was made a privy councillor, and, dying in London, Sept. 20, 1898, was buried in S. Paul's Cathedral.

He wrote vocabularies of the dialects of W. and S.W. Australia, two volumes on his early expeditions, and wrote also on



G. Grey



Sir George Grey,
British administrator

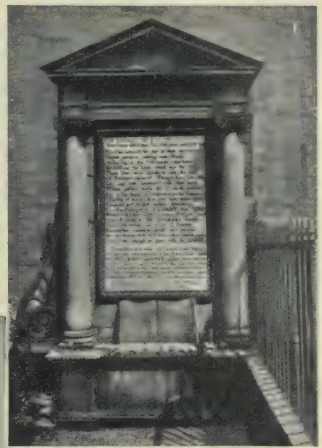
Polynesian mythology and the traditions and history of the New Zealand race. *See* Life and Times of Sir George Grey, W. L. & L. Rees, 3rd ed. 1893; Life, J. Collier, 1909.

Grey, LADY JANE (1537-54). Nine days queen of England. Daughter of Henry Grey, duke of Suffolk, great-grand-daughter of Henry VII, and cousin of Edward VI, she was remarkable for her beauty and accomplishments. Under her tutor, John Aylmer, afterwards bishop of London, she acquired great proficiency in Greek, Latin, Italian, French, and Hebrew, and her learning aroused the admiration of the great scholars of the day, Roger Ascham professing amazement at her skill in both speaking and writing Greek. In pursuance of a project to alter the royal succession from the Tudor to the Dudley family, she was married May 21, 1553,

volumes, including *The Spirit of the Border*, 1905; *Desert Gold*, 1913; *Wildfire*, 1917; *The Man of the Forest*, 1920.

Grey Book. General term in Belgium for publications issued by the government, containing diplomatic correspondence or other letterpress relating to foreign affairs.

Grey de Ruthyn, LORD. English title borne by the family of Clifton. Its first holder, Roger de Grey, a son of Lord Grey de Wilton, was called to Parliament in 1324, the barony being thus created. His



Edward Gould, from him to his daughter, wife of the marquess of Hastings, and from her to her son, the last marquess of Hastings. From 1869-85 it was in abeyance, but in 1885 it was adjudged to Bertha, wife of Augustus W. Clifton, and sister of the marquess of Hastings. Her



Greyfriars, Edinburgh. 1. Martyrs' Memorial, near the graves of many Covenanters who suffered death between 1661 and 1688. 2. The Churches from the S.E. 3. Entrance to the Covenanters' Prison in the churchyard

to Guildford Dudley, son of the duke of Northumberland, and her accession was announced July 10. On July 19 her short reign ended, and she was beheaded on Tower Hill, Feb. 12, 1554.

Grey, ZANE (b. 1875). American story writer. He was born at Zanesville, Ohio, Jan. 31, 1875, and educated at the university of Pennsylvania. Having studied law, he practised in New York, 1898-1904, and then turned to story writing. He won wide popularity by his romances of adventurous life in the American wild. His first story, *Betty Zane*, 1904, was followed by a rapid succession of

descendant, Edmund, the 4th baron, was made earl of Kent in 1465, being then lord treasurer of England. When Henry, 8th earl of Kent, died without sons in 1639, his earldom became extinct, but the barony passed to a nephew, Charles Longueville. His daughter, the wife of Sir Henry Yelverton, succeeded, and her son Henry was made a viscount. His son, the 2nd viscount, was made earl of Sussex in 1717.

The title was held by the earls until the 3rd earl died in 1799. It then passed to a grandson, Henry

two sons succeeded in turn.

Greyfriars. Two parishes, Old and New Greyfriars, Edinburgh, Scotland. The name derives from a Franciscan monastery of Observantines founded 1436 by James I, and destroyed in 1547 by the English. The Old Church, built 1614 and restored after a fire in 1845, had a spire, destroyed 1721; the New Church was added in 1721, and its organ was the first introduced into a Scottish Presbyterian place of worship. On the gravestone of Boswell of Auchinleck was signed the National Covenant, Feb. 28, 1638. From June-Nov., 1679, 1,200 Covenanters, taken prisoner at Bothwell Brig, were interned here. In 1707, in a corner of the churchyard, was erected the Martyrs' Memorial.

The churchyard contains many memorials of a time when, in Stevenson's words, every mason was a pedestrian Holbein. *See* Covenanters; Edinburgh; consult Epitaphs and Inscriptions in Greyfriars, J. Brown, 1867; Edinburgh, R. L. Stevenson, 1878; Tide-Marks of the Covenant, J. N. Ogilvie, 1910.

Greyhound. Breed of dog of Eastern origin, famed for its great speed. One of the oldest breeds of domesticated hunting dogs; it is represented on ancient Egyptian monuments. It is distinguished by its slender form, long legs, and long rat-like tail. Its muzzle is long, and well adapted to seize an animal going at great speed. To strengthen



Lady Jane Grey,
Queen of England
From a contemporary portrait



Greyhound. A typical example of a Waterloo Cup winner

its grip, a strain of bulldog was introduced into the breed with great advantage, for the dog had been bred to such a pitch of fineness that it could not hold its prey. Its narrow muzzle and small nostrils unfit it for following scent, and it hunts entirely by sight.

The English greyhound is the best known of the group, and is claimed as the parent of the others. It is smooth-coated, probably the result of breeding, for most other hounds of this type have rough coats. Coursing matches with greyhounds are extremely popular. The most celebrated greyhound of recent years was Colonel North's Fullerton, which won the Waterloo Cup four times. *See Dog.*

Greymouth. Chief town of Westland, South Island, New Zealand. It is on the larger W. Coast rly., and has almost complete rly. connexion with Christchurch. At the mouth of the Grey river, it has a good harbour, carries on gold-mining, beside brick-making and saw-milling, and is in the chief coal-mining area in the country. Pop., with suburbs, 8,373.

Grey Powder (*Hydrargyrum cum Creta*). Drug compounded of 1 part of mercury with 2 parts of prepared chalk. It is a useful purgative for children.

Greytown. Alternative name for the Nicaraguan port of San Juan del Norte (*q.v.*).

Greywacke (Ger. *grauwacke*). Hard, gritty, grey-brown, yellow, or dark coloured rocks of the Palaeozoic formations. Remarkable for the great variety of its constituents, quartz, felspars, biotite, iron ores, graphite, etc., it is common in the S. of Scotland, N. of Ireland, and Wales.

Greywether. Blocks of sandstone found thickly strewn over the surface of the country in Dorset, Wiltshire, Surrey, N. France, etc. It is so called from its fancied resemblance to sheep.

Gribble, BERNARD FINEGAN (b. 1872). British artist. Born in London, he first studied architec-

ture, but turned to drawing at the classes of the S. Kensington Art School. He exhibited regularly at the Royal Academy from before the age of 20, and has also shown at the Paris Salon. He is well known as a skilful painter of marine and naval subjects.

Gribble, FRANCIS HENRY (b. 1862). British author and critic. Born at Barnstaple, he was educated at Exeter College, Oxford. In 1887 he joined the staff of *The Observer* and *The Daily Graphic*. His first story, *The Red Spell*, 1895, was followed by several novels, including *The Things that Matter* and *The Lower Life*, 1896, dealing with phases of modern social life with shrewd insight and rather mordant wit. In 1907 he published *Madame de Staël and Her Lovers*, the first of a number of volumes biographical and critical. Gribble was in Luxembourg when the Great War broke out, and was interned at Luxembourg until late in 1915, afterwards publishing accounts of his experiences in *In Luxembourg in War Time*, 1916, and *The History of Rubleben*, 1919, written in collaboration with Joseph Powell. *See photo*, p. xxi.

Griboïédov, ALEXANDER SERGUIÉVITCH (1795-1829). Russian dramatist. In 1812 he joined the army, but left it in 1817; later he entered the diplomatic service, and was sent first to Persia and then to Georgia. He began by translating some of Shakespeare's plays, but in 1823 his comedy, *The Misfortune of Being Too Clever*, which could not be acted, was, in manuscript, delighting St. Petersburg.

In 1826 he was arrested for supposed complicity with the Decembrists, but was soon set at liberty and served in the Persian campaign, returning to St. Petersburg in 1828 "armed with a treaty of peace and a tragedy," Georgian Nights, inferior to his comedy. Griboïédov was killed during a rising at Teheran, Jan. 30, 1829.

Gricourt. Village of France, in the dept. of Aisne. It is 6 m. N.W. of St. Quentin, slightly W. of the road running from that town to Cambrai. Prominent in the Great War, it was taken by the British in April, 1917, lost in the spring of 1918, and recaptured in Sept., 1918. *See Arras, Third Battle of; Cambrai, Second Battle of.*

Gridiron. Frame of iron bars used for cooking food over a fire.



Gridiron used for cooking

S. Lawrence was martyred by being roasted over a gridiron, and the implement

is always associated with this saint.

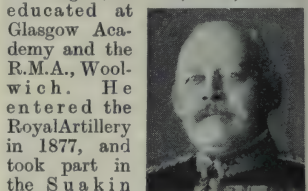
In engineering a gridiron is a series of parallel beams laid at regular intervals upon a masonry foundation, and located in a tidal basin. Over it a ship may be floated at high tide, and upon it she settles down as the tide falls, until, at low tide, the lower portions are exposed for examination. *See Concrete.*

Grieg, EDVARD HAGERUP (1843-1907). Norwegian composer. Born at Bergen, of Scottish origin, Jan.



15, 1843, he studied music at Leipzig and Copenhagen. Returning to Norway, he founded a musical union at Christiania in 1867, and was its conductor until 1880. Eventually he settled in Bergen and devoted himself to composition. He died Sept. 4, 1907. Grieg's work includes the familiar music to Peer Gynt, which first brought him fame, a piano concerto, orchestral and chamber music, and many songs. He was essentially a national composer.

Grierson, SIR JAMES MONCRIEFF (1859-1914). British soldier. Born at Glasgow, Jan. 27, 1859, he was



Sir J. M. Grierson, British soldier

educated at Glasgow Academy and the R.M.A., Woolwich. He entered the Royal Artillery in 1877, and took part in the Suakin operations 1885, and in the Hazara expedition, 1888. Director of military operations at headquarters from 1904-6, he was then selected to command the 1st Division at Aldershot. From 1912-14 he was general officer commanding-in-chief, Eastern command.

Grierson, who was military attaché at the British embassy, Berlin, 1896-1900, had a profound knowledge of German military affairs, and his selection to command the second corps of the British Expeditionary Force in Aug., 1914, was regarded as excellent. He died in the train in France on his way to the front, Aug. 18, 1914. Grierson's published works included *Armed Strengths of Armies of Russia, Germany, and Japan, 1886-88; Staff Duties in the Field, 1891.*

Grierson, SIR ROBERT (c. 1655-1733). Laird of Lag, and persecutor of the Covenanters. He was appointed president of the military court at Kircudbright in 1681, was made a baronet and pensioned by James II in 1685; presided at the trial and execution of the Wigtown Martyrs, and after the revolution of 1689 was fined and imprisoned. He died of apoplexy. He used the thumbkins in enforcing the Test Act, systematically refused his victims permission to prepare for death by prayer, and is said to have rolled them down a slope in barrels fitted with spikes and knife-blades. He was the original of Sir Robert Redgauntlet in *Wandering Willie's Tale*.

Griffenfeld, PEDER, COUNT (1635-99). Danish statesman. He was born in Copenhagen, his name before he was ennobled being Peder Schumacher. In 1663 he became librarian to Frederick III, and keeper of the royal archives and later the king's secretary. In 1670 he was created a count, and from 1673-76 he was chancellor, controlled the country's foreign policy, and aimed at establishing a Scandinavian League. In 1676 he was the victim of an intrigue, was charged with treason, and sentenced to death, but on the scaffold the sentence was commuted to imprisonment for life.

Griffin or **GRYPHON** (Gr. *gryps*, Lat. *gryphus*). Mythical monster, part lion, part eagle, supposed to typify strength and vigilance. It figures in Persian sculpture as a guardian of treasure, on Greek coins, in classical architecture, Teutonic legend, and heraldry.



Male Griffin in heraldry

Often confused with the dragon, it is represented in heraldry with the body, tail, and hind legs of a lion, and head, neck, breast, fore legs, and wings of an eagle, and with forwardly pointed ears. When represented rampant it is said to be segreant. The male griffin has no wings, but is armed with protruding rays or tufts of hair, and sometimes horned like the unicorn.

The armorial crest of the city of London (*q.v.*) is a griffin's sinister wing argent, charged with a cross gules; the supporters are griffins

elevated and endorsed, argent and charged on the wings with a cross gules. The Temple Bar Memorial, at the junction of Fleet Street and the Strand, popularly known as The Griffin, erected at a cost of £10,600, and unveiled Sept. 8, 1880, is surmounted by a "griffin," designed by C. B. Birch. See *Gray's Inn*.

Griffin, GERALD (1803-1840). Irish dramatist, novelist, and poet. He was born in Limerick. Dec. 12, 1803. His works include *Tales of the Munster Festivals*, 1827, and *The Collegians*, a novel, 1829, new ed. 1896, on which Dion Boucicault founded the play of *The Colleen Bawn*. Later in life he formed the teaching society of The Christian Brothers and died in Cork, June 12, 1840. His novels reflect very faithfully the life and scenery of southern Ireland. See *Life*, by his brother, 1843; novels and poems, ed. W. Griffin, 8 vols., 1842-43; *Poetical and Dramatic Works*, 1857-59.

Griffinia. Genus of bulbous perennials of the natural order *Amaryllidaceae*. They are natives of Brazil, and have large bulbs and oblong lance-shaped netted leaves, and white, blue, or lilac flowers forming an umbel.

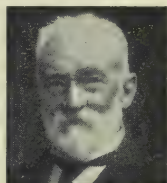
Griffith, ARTHUR (1867-1922). Irish politician. Griffith worked in his early years as a compositor and journalist. Travelling widely, he at one time edited a newspaper in S. Africa. In 1899 he founded the short-lived journal *The United Irishman*, but the publication of



Gerald Griffin,
Irish novelist
After Mercier

his historical study *The Resurrection of Hungary*, 1904, is a landmark in the early history of the Sinn Féin movement, of which he may be counted one of the founders. He was arrested in May, 1918, but whilst interned in England was returned as Sinn Féin member for E. Cavan at the by-election in June, and again in Dec., 1918. Released in 1919, Griffith was acting president of Dail Éireann, and in 1922 head of the Irish Free State executive. He died Aug. 12, 1922.

Griffith, SIR SAMUEL WALKER (1845-1920). Australian lawyer and politician. Born at Merthyr Tydvil, June 21, 1845, the son of a Nonconformist minister, he emigrated when young to Australia. Educated at the university of Sydney, in 1867 he was called to the bar. Having settled in Queensland, he became associated with the politics of that state. In 1883 he was made premier. He held the latter office until 1888, and again 1890-93, when he resigned to become chief justice of Queensland. He held that post until 1919, and died at Brisbane, Aug. 9, 1920. He had much to do with drawing up the constitution of the Commonwealth of Australia, and in 1903 was chosen its chief justice, becoming later a member of the judicial committee of the privy council.

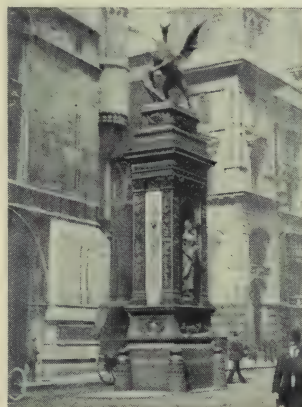


Sir Samuel Griffith,
Australian lawyer
Russell

Griffon. European breed of dog. A rough-coated animal, it is somewhat taller than the setter



Griffon. Copthorne Wisacre, a champion Brussels griffon



Griffin. The memorial erected in 1880 on the site of old Temple Bar, London

and of a grizzly liver colour. The dogs are used in hunting game birds. The Brussels griffon is a Belgian dog; it is small, red, short-nosed, and at one time was very popular as a pet in England. The word is used sometimes as a variant of griffin. See *Dog*; colour plate.

Griggs, JOHN WILLIAM (b. 1849). American politician. Born July 10, 1849, he was admitted to the bar in

1871, and was appointed city counsel to Paterson, New Jersey. Member of the New Jersey assembly (1876-77) and senate (1882-88), he was president of the latter in 1886, and was governor of the state 1895-98, when he resigned on his appointment as attorney-general in McKinley's cabinet. On his resignation in 1901 he was appointed a member of the court of arbitration at The Hague.

Grigorescu, NICOLAS (1838-1907). Rumanian painter. Born at Vacareshti-Restoaca, Rumania, May 15, 1838, the son of an agricultural labourer, he was saving his wages as a painter of icons to enable him to study in Paris, but was persuaded to remain in his native land to produce pictures for churches and monasteries. But the call to Paris proved irresistible, and in 1861 he was received into the congenial society of the Barbizon school. The forest scenery provided many themes for his brush, and his *Sunset at Barbizon*—now in the Simu Museum at Bukarest—ranks as his masterpiece in landscape. Returning to Rumania, he was captivated by the manners of the gypsies, Jews, and shepherds of the Danubian states, and incidents in their lives inspired several of his best pictures.

In 1870 he again made his home in France, but in 1877 he hastened to bear his part in the campaign against the Turks, of which he left a magnificent memorial in his *Attack at Smardan*, purchased by the government for the town hall of Bukarest. Portraiture also attracted him, and his portraits of his king and queen ("*Carmen Sylva*") are among his most brilliant works. He died at Campina, in Rumania, July 21, 1907, universally regarded as the greatest painter his country had produced.

Grigoriev, VASILII VASILIEVITCH (1816-82). Russian Orientalist and numismatist. Born at St. Petersburg, March 15, 1816, he studied Oriental languages at its university and was appointed professor of Persian. He proceeded in 1838 to Odessa, where he founded an historical and antiquarian society. He became governor-general of Orenburg, 1852, and professor of Oriental history at St. Petersburg, 1862-78. Among his numerous works are *History of the Mongols*, 1846; *Description of the Khanate of Khiva*, 1861; *Kabulistan and Kafiristan*, 1867; *The Scythian Nation*, 1871; *Russia in Asia*, 1876. He died at St. Petersburg, Jan. 2, 1882.

Grigorovitch, DMITRI VASI LIEVITCH (1822-1900). Russian novelist. More or less inspired by

George Sand, he began with *The Village*, 1846, a series of remarkable stories rendering with great faithfulness the conditions of the peasantry under the system of serfdom. Other of his works were *Anthony the Unlucky*, 1848; *The Valley of Smiedov*; *The Fishers*, 1853; and *The Colonists*, 1855. His stories, though lacking in literary skill, possess a lasting value as ethnographical studies.

Grijalva. River of S.E. Mexico. Named after its discoverer, Juan de Grijalva, the Spanish explorer, it rises in Guatemala, and flows 300 m. W., N.W., and N. to the Gulf of Campeachy near the Bay of Tupilco. For a part of its course it forms the boundary between the states of Chiapas and Tabasco. It is navigable for about 50 m.

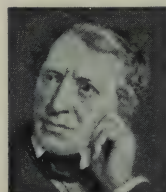
Grile, *Dob*. Pen-name adopted for his earlier writings by the American author Ambrose Bierce (*q.v.*).

Grill (*Fr. griller*, to boil). Utensil for broiling meat over a fire, a form of gridiron. The grill-room in restaurants is the room where such broiling is actually done. See *Cookery*.

Grille. French word meaning literally a grating of metal or wood, used to screen a window or other aperture. The close iron grating in prison cells through which prisoners converse, without being able to come into personal contact with their visitors, is called a grille. The grille was the name given to the barrier behind which lady

visitors heard debates in the House of Commons. This was removed in 1918. Tombs are often protected by grilles. A beautiful example is the one surrounding Queen Eleanor's tomb in Westminster Abbey.

Grillparzer, FRANZ (1791-1872). Austrian dramatist. He was born in Vienna, Jan. 14, 1791, and after studying law entered the Austrian civil service in 1813, remaining in it until he retired with a pension in 1856. At the age of 25 he made his first great dramatic



Franz Grillparzer, Austrian dramatist

hit with *Die Ahnfrau* (The Ancestress), a ghost tragedy that made him famous. It was followed by a succession of pieces that made the author's name the most notable in Austrian literature. His other early plays included *Sappho*, 1819 (several Eng. trans.); a trilogy on *Das Goldene Vlies* (The Golden Fleece), 1821; and *König Ottokar*,



Grille. Former grille of Ladies' Gallery in House of Commons. Top, right, grille around the tomb of Queen Eleanor in Westminster Abbey

1825, an historical play on a 13th century king of Bohemia.

In 1826 Grillparzer visited Goethe at Weimar. In 1828 came another historical play, *Ein treuer Diener seines Herrn* (A Faithful Servant); then came *Des Meeres und der Liebe Wellen* (The Waves of the Sea and of Love), 1831, the story of Hero and Leander; and *Der Traum ein Leben* (The Dream, a Life), 1835; these two plays were long leading favourites on the German stage. In 1838 his comedy *Weh dem der lügt* (Woe to Him Who Lies) proved a failure and disheartened the author. He had earlier published a volume of poems and on Jan. 21, 1848, produced his chief prose story, *Der arme Spielmann* (The Poor Fiddler). He died in Vienna, Jan. 21, 1872, leaving three unacted plays, *Die Jüdin von*

Toledo (The Jewess of Toledo); Ein Bruderzwist im Hause Habsburg (A Brother's Quarrel in the House of Habsburg); and Libussa, a fine drama on the queen-founder of Prague. His collected works were published in 20 vols., at Stuttgart, 1892-94, and in 1890 a Grillparzer Society was founded in Vienna. See F. Grillparzer and the Austrian Drama, G. Pollak, 1907.

Grimaldi, JOSEPH (1779-1837). English clown. Born in London, Dec. 18, 1779, and belonging to a



Joseph Grimaldi the clown, in Harlequin and Friar Bacon

From a sketch by G. Cruikshank

family of clowns and dancers, he danced at Drury Lane and Sadler's Wells when quite an infant, and made his greatest success in the pantomime of Mother Goose at Covent Garden in 1806. His singing of such ditties as Tippetty-Witchet and Hot Codlins aroused great enthusiasm. He died in London, May 31, 1837. See *Memoirs of J. G.*, ed. Charles Dickens, 1838.

Grime's Graves. Flint mines of the stone age at Weeting, Norfolk, which in 1870 Canon Greenwell, their explorer, claimed as neolithic. Within 20 acres there are 254 pits, 20 ft. to 60 ft. across, and 40 ft. deep, often with lateral tunnels. Red-deer antlers were used as picks, chalk cups as lamps. The older idea was that they were the remains of a British village. They were systematically re-examined in 1919.

Grimm, JAKOB LUDWIG KARL (1785-1863). German philologist and folk-lorist. Born Jan. 4, 1785, at Hanau in Hesse-Cassel, he studied law at Marburg, visited Paris in 1805, and in 1808 became librarian to Jerome Bonaparte at Cassel. His first book, on the Meistersingers, 1811, was followed in 1812 by the

first collection of Kinder- und Hausmärchen, made by him and his brother, and continued in 1814 and



Wilhelm Grimm

In 1829 Jakob went to Göttingen as librarian and lecturer, accompanied by his brother, but political changes led to their dismissal. In 1840 both were invited to professorships in Berlin. Jakob's most important works are *Deutsche Grammatik*, 1819, and *Geschichte*

der deutschen Sprache, 1848, which revolutionised the study of Teutonic philology; *Deutsche Reichsaltertümer*, German legal Antiquities, 1828; *Deutsche Mythologie*, 1835, Eng. trans. 1879-88. The brothers began a German Dictionary and edited many old German classics. Jakob died, Sept. 20, 1863.

His younger brother, Wilhelm Karl (1786-1859), born at Hanau Feb. 24, 1786, after holding a post in the Cassel library, became sub-librarian at Göttingen in 1830, and professor at Berlin in 1840. His whole life was the counterpart of his brother's. His chief independent work was *Die deutsche Heldensage* (German Heroic Saga), 1829. He died Dec. 16, 1859. See Cruikshank; Philology.

Grimma. Town of Saxony. It stands on the Mulde, 19 m. from Leipzig. It has a famous school, the prince's school, with a free library. In the castle here the margraves of Meissen and their successors, the electors of Saxony, lived for several centuries. Other buildings are the 15th century town hall and several churches and schools. The industries include a trade in agricultural produce. The town grew up around the castle, and before the Reformation there was a monastery here. Pop. 11,440.

Grimmelshausen, HANS JAKOB CHRISTOFFEL VON (c. 1625-76). German author. Born at Gelnhäusen,

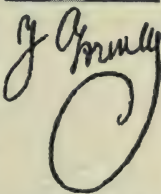
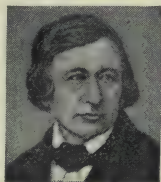
near Hanau, Prussia, he was carried off at the age of ten by Hessian troops, and led an adventurous life with the army as camp follower and soldier of fortune. After the conclusion of the Thirty Years' War in 1648, nothing is known of him until 1667, when he was chief magistrate of Renchen, in the Black Forest.

Two years later Grimmelshausen published what has been described as the one German prose classic of the 17th century, *The Adventurous Simplicissimus* (Eng. trans. 1912). It is an extraordinary medley of adventure and observation, largely based on its author's own experiences. Occupying an important place in the annals of picaresque fiction, *Simplicissimus* throws valuable light on the social side of the Thirty Years' War, while its closing chapters on its hero's desert-island experiences might have inspired Defoe's Robinson Crusoe. Grimmelshausen wrote many other works under various pseudonyms, mostly anagrams of his name.

Grimm's Law. In philology, the name given to the regular sound-shifting or consonantal interchange between (1) Sanskrit, Greek and Latin; (2) Low German; (3) High German. The rule is that an aspirate in (1) corresponds to a soft consonant in (2) and to a hard consonant in (3); a soft consonant in (1) corresponds to a hard consonant in (2) and an aspirate in (3); a hard consonant in (1) corresponds to an aspirate in (2) and to a soft consonant in (3): Greek *thura*, English door, German *Tor*; Greek *thēr*, English deer, German *Tier*; Latin *dens*, English tooth, German *Zahn*.

Many apparent exceptions have been explained by what are known as Verner's and Grassmann's Laws, and others will probably be found to be the result of other phonetic laws not yet discovered. Grimm's Law takes its name from the philologist, Jakob Grimm (*q.v.*), who first definitely formulated it, although the principle had already been enunciated by a Danish scholar, Rask. See Phonetics.

Grimby or GREAT GRIMSBY. County and mun. borough of Lincolnshire. It stands near the mouth of the Humber, 15 m. from Hull and 155 from London, and is served by the G.C. and G.N. Rlys. The chief buildings are the parish church of S. James, a 13th century building, the town hall, exchange, and custom house. There is a 16th century



Grimsby arms



Grimsby, Lincolnshire. The Royal Dock and Hydraulic Tower, 300 ft. in height

grammar school, and a large fish market. There is a free library, technical school, and benevolent institution for seamen; also public gardens. The principal industry is fishing, herring being the chief catch. In 1919 over 150,000 tons of fish, worth nearly £7,000,000, were landed, and the port has over 800 steam trawlers, being probably the largest fishing centre in the world. It has an import and export trade, especially in coal, machinery, timber, grain, iron, and butter. Other industries include shipbuilding, tanning, brewing, and rope-making, while there are flax and bone-crushing mills.

Grimsby was a Danish settlement and became a borough soon after the Norman Conquest. It was soon a flourishing port, but after a time entrance to it was made difficult by the accumulation of sand. This, however, was overcome, and in the 19th century it was a fishing centre, its prosperity increasing rapidly. Docks were built, a great extension being made by the Manchester, Sheffield and Lincolnshire Rly. between 1849-54. Further extensions followed until there were docks of every kind, with ample quays, etc. During the Great War the trawlers and fishermen were employed in mine sweeping and the like. It is called Great Grimsby to distinguish it from Little Grimsby, a village 4 m. from Louth. Market days, Mon. and Fri. Pop. 83,000.

Grim's Dykes. Folk-name for several prehistoric entrenchments in Great Britain. There are examples at Berkhamstead, Herts; Wealdstone, Middlesex; and Downton, Wilts. Like Devil's Dykes (*q.v.*), the name indicates their mysterious origin; both are used of that from Mongewell to Henley, Oxon, 10 m. long; and of others at Princes Risborough, Bucks, and in Dorset. It is variously spelled Grime's, Graeme's, and Graham's. See Antonine's Wall.

Grimsel. Mountain pass of Switzerland, in the Bernese Alps. It leads from the valley of the Aar, in the canton of Bern, to that of the Rhône in Valais, and reaches an alt. of 7,100 ft. From Meiringen the carriage road leads past Handegg, joining the Furka route W. of the Rhône glacier. There is

an old hospice near the Grimsel lake, and farther on is the Todtensee or Lake of the Dead.

Grimspound. Prehistoric stronghold on Dartmoor, Devonshire. Having an area of four acres, containing the remains of 24 Bronze-age hut-circles, it is enclosed by two irregularly oval walls of coursed granite, 3 ft. 6 ins. apart, 530 yds. long, and originally 8 ft. high, with three entrances. They served to defend the village flocks and herds against animal and human foes.

Grimthorpe, EDMUND BECKETT, 1ST BARON (1816-1905). British lawyer. Born May 12, 1816, a son of Sir Edmund Beckett Denison, whose



1st Baron Grimthorpe, British lawyer Russell

he dropped on inheriting the baronetcy, he was educated at Eton and Trinity College, Cambridge. Called to the bar at Lincoln's Inn in 1841, he became Q.C., 1854, and was chancellor and vicar-general of the province of York from 1877-1900. A leader of the parliamentary bar, a vigorous controversialist in ecclesiastical and architectural matters, as shown in the restoration of St. Alban's Abbey carried out under his sole direction and at his expense, the term "Grimthorping" was applied to any ruthless restoration of ancient cathedrals. He died at St. Albans, April 29, 1905.

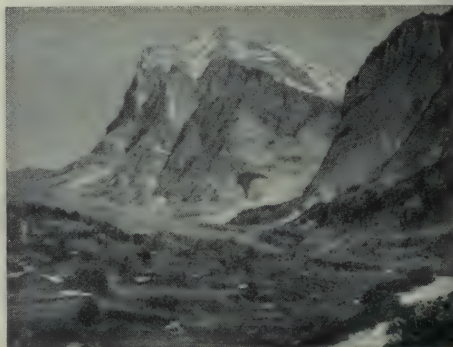
Grindal, EDMUND (c. 1520-83). English prelate. The son of a farmer, he was born at St. Bees and was educated at Cambridge. Ordained in 1544, he became known as a religious reformer. Ridley secured promotion for him, one post being that of chaplain to Edward VI, but on the king's death he left England for Frankfurt. He returned in 1559, Mary by then being dead, and was made master of Pembroke Hall, Cambridge. In 1559, too, he was consecrated bishop of London, in succession to Bonner.



Edmund Grindal, English prelate
After De Vos

As bishop, Grindal showed little desire to punish Nonconformists, and is usually regarded as a weak ruler of his diocese, which he left in 1570 to become archbishop of York, where again he was less zealous than the extremists liked. In 1575 he was chosen archbishop of Canterbury, where he was strong enough to refuse to obey Elizabeth when she ordered him to suppress the prophesies or meetings of Puritan clergy. He was therefore suspended as regards the non-spiritual duties of his office, and was not restored to these until 1582. Grindal died in his palace at Croydon, July 6, 1583. He is buried in the parish church at Croydon.

Grindelwald. Valley of central Switzerland, in the Bernese Oberland. It is 13 m. long by 4 m. broad, and its station is 11 m. S.E. of Interlaken. The Black Lütschine river flows through the valley, which is enclosed by the peaks of the Wetterhorn, Schreckhorn, Mettenberg Eiger, and Faulhorn. Two glaciers descend almost to the river.



Grindelwald. The Bernese valley, looking east towards the Wetterhorn

A favourite excursion centre, both in summer and winter, many hotels and shops have been built between the hamlet of Gydsidorn and the station. A wooden church was replaced by a stone one about 1180, which in turn was superseded by the present church, erected in 1793. The valley lies at an altitude of 3,410 ft. The inhabitants are mostly German-speaking Protestants. Pop. 3,468.

Grinding. Term applied to the sharpening of tools, cutlery, etc., or the smoothing of any hard substance by rubbing away its surface; and also to crushing and pulverising machinery.

The grinding or sharpening of tools, cutlery, etc., is carried out on rapidly revolving power-driven stones. In tool grinding the whole operation is carried out mechanically to ensure an accuracy of the angles of the cutting edges of such tools as drills, impossible with hand-ground tools. Most of the grinding is wet grinding, i.e. a plentiful supply of water is used with the emery or other stone. Dry grinding is still used for pointing needles and prongs of forks, finishing steel pens, etc.

For smoothing purposes various methods are used. In brass and bell work powdered pumice stone is used, while a sand blast is used for cleaning, sharpening, frosting, etc. The sand blast is particularly useful for resharpening worn files. For grinding glass lenses and metal specula emery powder is used; and for jewels, diamond dust. Plate glass is ground flat by grinding two sheets of the glass together with emery, sand, or other suitable grinding material.

Grinding is an essential operation in the extraction of many metals from their ores, and in the preparation of Portland cement, corn, etc. The appliances range from the primitive wooden mortar and pestle to the elaborate roller machines of the modern flour mill. The machines used for reducing rock to about 1 in. in size are called breakers; for the reduction to fragments capable of passing through a coarse mesh, crushers; and for reduction to powder form, pulverisers. The latter machines are often combined. *See* Milling.

Gringo. Colloquial term employed in the Latin American republics to designate a traveller or settler of other European origin, especially British or Anglo-American. Like Dago (*q.v.*), it came into general use in the '80s, and is apparently a variant of Griego (Greek).

Grinnell Land. Eastern portion of Ellesmere Island, British N. America. It is separated from

Greenland by the Kennedy and Robeson channels. The N. portion of Ellesmere Island is called Grant Land. Largely an ice-covered, mountainous and desolate tract, it rises in Mt. Arthur to nearly 5,000 ft. The valleys in summer support musk oxen, wolves, foxes, and grouse, and several kinds of arctic plants. Discovered by Hayes in the second Grinnell Expedition, in 1854, it was explored by Greeley in 1882. Near Lady Franklin Bay, on the N.E., are deposits of Tertiary coal, among the most northerly known.

Grinstead, EAST. Urban dist. and market town of Sussex. It is 30 m. from London on the L.B. & S.C. Rly. Its chief thoroughfare, the High Street, contains some old timber-built houses, and here is Sackville College, an almshouse



East Grinstead. High Street of the Sussex market town, with Tudor timbered houses

dating from 1608. There is a trade in agricultural produce, while bricks and tiles are manufactured. Market day, Thurs. Pop. 7,100.

Grinstead, WEST. Parish and village of Sussex. It is 18 m. S.W. of East Grinstead, on the L.B. & S.C.R. Its parish church retains part of the Norman structure. The ruins of Knepp Castle are near the village. In West Grinstead Park, Pope composed *The Rape of the Lock*. Pop. 1,620.

Gripes. Painful spasms in the intestines, most frequently due to undigested food. *See* Colic.

Griqualand East. N.E. district of the Cape Province, S. Africa. It was named from the Griquas, a mixed race descended from Dutch settlers and native women. It lies S.E. of Basutoland and S.W. of Natal, and was annexed to Cape Colony in 1875. The chief village is Kokstad, named after a half-breed Griqua chief, Adam Kok. A treaty was made on Oct. 5, 1843, with his younger son, Adam Kok III, which caused trouble with the Boers, and the dissatisfied farmers left the district. Area, 6,602 sq. m.

Pop. 249,088, including 7,950 whites and 241,138 coloured.

Griqualand West. District of the Cape Province, S. Africa, north of the Orange river. It was annexed by Great Britain, Oct. 17, 1871, after an arbitration court had declared the territory to be the property of the chief Water-boer, and not part of the Orange Free State. Griqualand West was annexed to the Cape in 1877, but not actually incorporated until 1880. The discovery of diamonds at Kimberley in 1867 attracted immigrants to this district. De Beers, Belmont, Barkly West, and Griquatown are other important mining centres. Area, 15,197 sq. m.

Grisaille (Fr. *gris*, grey). Species of grey colour obtained by mixing black and white in varying proportions. Grisaille is a valuable

medium for monochromes, is common in stained-glass windows and mural decoration, and is used freely, e.g. by Van Dyck, for sketches. The ancient Greek painters, who knew nothing of chiaroscuro, found grisaille helpful in their schemes of gradation and modelling, as it enabled them

to represent the appearance of relief. Once employed by many artists for blocking in their subjects, Jean Baptiste Oudry condemned the practice, especially when the intermixture of white was



Griqualand East. Group of Griquas, descendants of Dutch settlers and natives

excessive, because this dried rapidly and did not incorporate with the colours of the over-painting.

Griselda, **GRISSELL**, **GRIZZLE**, or **GRISELDIS**. Heroine of traditional fiction. She is regarded as the model of wifely obedience and patience. Her story, generally derived from Boccaccio, who may have got it from an earlier source, has been told by Petrarch, by Chaucer (in the Clerk's Tale), has several times been treated dramatically, in Germany by Hans Sachs (1546), in England by John Phillip (1665), Henry Chettle (1603), and others, and has been rendered in ballad form.

Grisette (Fr. *gris*, grey). Name given in France to a girl or young woman of the working-class. It implies a certain capacity for enjoyment and an absence of restraint, but not necessarily immorality. The name was given to them because the girls were usually dressed in garments made of a woollen cloth called grisette from its grey colour.

Grisi, **GIULIA** (1811-69). Italian singer. Born in Milan, July 28, 1811, of a family of singers, she appeared in Ros-



Giulia Grisi,
Italian singer

sini's Zelmira when only 17, and thenceforward enjoyed continuous success until her death in Berlin, Nov. 29, 1869. Very beautiful and highly gifted,

both as a soprano singer and an actress, Madame Grisi was a member of that famous quartet which included Rubini, Tamburini, and Lablache, and for which Bellini composed I Puritani.

Gris Nez (Grey nose). Cape of France, in the dept. of Pas-de-Calais, on the Strait of Dover at its narrowest point. It is the nearest part of France to the English coast.

Grison or **HURON** (*Galictis*). Carnivorous mammal of the weasel family found in S. America and Mexico. It is about as large as a marten, and is grey on the back and dark brown on the underparts, with yellow tips to the tail and ears. It lives in hollow trees and clefts in the rock, and preys upon small birds and mammals.

Grisons (Ger. *Graubünden*). Easternmost and largest canton of Switzerland. It is bounded N. and E. by Austria and S. by Italy, and has an area of 2,773 sq. m. Composed of the basins of the Upper Rhine and the Inn, with that of two tributaries of the Ticino and

one of the Adda, it is almost wholly mountainous, comprising most of the ancient Rhaetia. There are many mineral springs, forests, and mt. pasturages, the lower ones sustaining a fine breed of cows. The climate is generally severe, and the vegetation Alpine, though the vine and maize are grown in sheltered spots.

The capital is Chur or Coire (*q.v.*); other important towns are Dissentis, Davos, and Arosa. The canton includes the Engadine or upper valley of the Inn, noted for its scenery. One of the most sparsely populated cantons, of its population nearly one half are Catholic and German-speaking, and the rest speak Romansch dialects or Italian.

Until 1798 the canton consisted of three leagues—the Grey League (founded 1395), the League of God's House (1367), and that of the Ten Jurisdictions (1436). These combined in the Three Perpetual Leagues in 1471. After a troublous history it joined the Helvetic Republic, 1799-1801, and in 1803 it entered the Swiss Confederation. Pop. 118,262.

Grisomite (Fr. *grison*, fire damp). French safety explosive, used in coal mines. It consists chiefly of varying proportions of ammonium nitrate, dinitronaphthalene, potassium nitrate, etc. See Explosives.

Grist (A.S., to grind). Word originally applied to the act of grinding corn. It came to be used for the corn ground and the meal produced, and colloquially for anything that is a source of profit. Grist is also used for a size of rope; e.g. common grist is a rope 3 ins. in circumference.

Griswold, **RUFUS WILMOT** (1815-57). American author. Born at Benson, Vermont, Feb. 15, 1815, he became a journalist. For a time he was a Baptist minister, but returning to newspaper work he joined the staff of a paper in New York. Later, he edited Graham's Magazine and The International Magazine. Griswold made several

useful collections of prose and verse, including Poets and Poetry of America, 1842, and wrote Republican Court, 1854, an account of society in the time of Washington. He died Aug. 27, 1857.

Grit. Consolidated sand of which the particles are angular and comparatively coarse. See Sand; Sandstone.

Grizzly. Name of a large bear. The word means rather grey. A powerful creature, the grizzly inhabits the mountainous districts of the west of Canada and the U.S.A. It is much larger and heavier than the brown bear, which to some extent it resembles, and is only dangerous when attacked or hungry. See Bear.

Groat (Low German, *grote*, great). English silver coin, now demonetised. The groat was first issued in



Groat. Two sides of the coin minted by Edward III, $\frac{1}{4}$ in. diameter

England by Edward III in 1351, minted at London and York, its original value being one penny, but coming to have the value of fourpence. A new issue was made by Henry VII, but the groat was discontinued in 1662. It was revived as a silver fourpenny piece by William IV in 1836, and the fact of its issue having been advised by Joseph Hume gave it the popular name of the "Joey." Issue was dropped in 1856, and it was demonetised in 1887.

The Scots groat was issued at Edinburgh by David II in 1358, and James V coined a $\frac{1}{2}$ groat in 1527. An Irish groat was issued by Henry VI in 1460. See Coinage.

Grocer. Modern form of grosser, one who dealt wholesale (*en gros*). In modern usage

the word is applied to a retailer of tea, sugar, coffee, spices, etc., which are known collectively as groceries. In medieval times he was known as a spicer. Hence the names Grocer and Spicer. In the United Kingdom the grocers have a regular



Grisons, Switzerland. General view of Coire, the capital town of the canton

trade organization, several journals devoted to their interests, and hold annually an exhibition in London.

Grocers' Company. Second of the 12 great livery companies of the city of London. Its founders,



Grocers' Company arms

known as Peppers and Spicers, met as a fraternity of S. Anthony as early as 1345, when they were granted letters patent of incorporation by Edward III, which were confirmed or added to by 12 later documents. It participated in the Ulster colonisation scheme of 1613, but sold the property in 1872. Nearly all its property in the city was lost in the fire of 1666. Its freemen and honorary members have included Sir John Crosby, Charles II, William III, George V, when duke of York, the duke of Edinburgh, Sir Philip Sidney, 1st duke of Albemarle, William Pitt, Canning, Sir Robert Peel, Lord Roberts, Lord Salisbury, and A. J. Balfour.

Its first hall was built in Old Jewry c. 1427, and served for some time for the purposes of the Bank of England. The existing building in the Poultry, E.C., was erected in 1798-1802 from designs by T. Leverton, the entrance into Princes Street being built in 1827. Notable for its services to charity and good learning, the company built a new wing to the London Hospital in 1876, founded Oundle School, Northants, and middle-class schools at Hackney Downs in 1876. It has contributed largely to the City and Guilds of London Technical Institute, and established scholarships for research in sanitary science. Its corporate income is estimated at £38,000, and its trust income at £500. See *Some Account of the Grocers*, J. B. Heath, 1854.

Grocyn, WILLIAM (c. 1446-1519). English classical scholar. He was born at Colerne, Wiltshire, and educated at Winchester and New College, Oxford, of which he was fellow 1467-81. A friend of Sir Thomas More, Thomas Linacre, John Colet, William Latimer, and Erasmus, who called him his *patronus et praeceptor*, he studied in Italy, 1488-90, under Politian and Chalcondyles, was a pioneer of the New Learning, and among the first publicly to teach Greek at Oxford. While in Italy he made the acquaintance of the printer Aldus Manutius (*q.v.*). He was divinity reader at Magdalen College, 1481-88, prebendary of Lincoln Cathedral, held benefices at Newton

Longueville, Deepdene, London (S. Lawrence Jewry), Shepperton, and East Peckham, and was master of All Hallows, Maidstone, where he was buried. A monument has been raised to his memory in the church at Newton Longueville. See *Oxford Historical Society's Collectanea*, ii, 1890.

Grodek. Town of Poland, formerly in Austrian Galicia. It is 12 m. W.S.W. of Lemberg, and was prominent in the Great War in the Austro-Russian campaigns in Galicia. After their capture of Lemberg, Sept. 3, 1914, the Russians advanced W., and from Sept. 6-13 heavy fighting took place around Grodek, which fell to them on Sept. 12. As the result of the Austrian counter-offensive the Russians, in July, 1915, retreated from Grodek to a position in front of Lemberg. See *Lemberg, Battles of*.

Grodno. One of the districts E. of the Baltic Sea, formerly a government in Russia. It is bounded N., S., E., and W. by the govts. of Vilna, Minsk, Volhynia, and Poland respectively. Its area is 14,896 sq. m. It is an immense plain, with numerous lakes and marshes, watered by the Bug, Niemen, and Narev. The soil is generally barren, but grain, flax, hemp, tobacco, and fruit are cultivated. There are cloth and tobacco factories, tanneries, and distilleries. In the 13th century the district belonged to the Lithuanians, then passed to the Poles, and in 1796 was incorporated with Russia. Pop. 2,094,300.

Grodno. Chief town of the district of the same name. It stands on the Niemen and the Petrograd-Warsaw railway, 160 m. N.E. of Warsaw. There are cloth, silk, tobacco, firearms, and machinery factories, and considerable trade is done in corn, timber, and hemp. In the neighbourhood are the mineral springs of Duskeniki. Grodno was the residence of Stephen Bathory in the 16th century, and it was here that the partition of Poland was signed in 1793. In Feb., 1921, its possession was in dispute between Poland and Lithuania. Pop. 61,600. See *N.V.*

Grodno, CAPTURE OF. German success in the Great War, Sept. 1-4, 1915. On Aug. 25 Brest-Litovsk was in German hands, and on the following day the Russians lost Bialystok. Scholtz closed in on Grodno, N.E. of which Eichhorn was nearing Orany, reaching it on Aug. 31, and rendering Grodno untenable. On Sept. 1 the Germans, with whom was Beseler's siege artillery, attacked the fortifications on the W. and N. They stormed the forts on the W. side, and captured one on the N. with its garrison; later

in the day they carried a fort still farther N.

Meanwhile, the main Russian forces had been evacuating the fortress, and on Sept. 2 it was entered by the Germans, who crossed the Niemen and got into the town. To secure the retreat of a considerable force that was in danger of being surrounded, the Russians developed a counter-offensive on Sept. 3, re-entered the town, and secured the desired retirement of the threatened body. On Sept. 4 the Germans were again in full possession of the town. The Russians retreated on Lida, S. of Vilna, on the W. of which Eichhorn was then making a frontal attack while Scholtz, moving on from Grodno, took Skidel on Sept. 12, and advanced through Mosty north-eastward, but failed to cut them off.

Grog. Name applied by sailors in the royal navy to their ration of unadulterated rum. The word is said to be derived from old Grog, a nickname of Admiral Vernon, so called from his coarse, or program cloak. In the days of the four-wheeled cabs, cabmen used to drink rum mixed with hot water, a slice of lemon, and a bit of sugar, which they called grog. See *Rum*.

Grogging. Name for an ingenious evasion of excise dues. Casks containing spirit absorb into the wood in time an appreciable quantity of spirit which can be extracted by rinsing and other processes. By the Finance Act of 1898 grogging and the possession of a cask so treated, or of any spirit obtained by the process, are offences punishable by a fine of £50.

Groin. In anatomy, the fold at the junction of the abdomen and the front of the thigh.

Groin. In architecture, the angle formed by the intersection of arches or vaults. Groined vaulting is so called to distinguish it from barrel or other forms of arch construction in which no such intersection takes place. See *Gothic Architecture*.

Grolier, JEAN, VICOMTE D'AGUI-SY (1479-1565). French book collector. Born at Lyons, he entered the French diplomatic service, and was ambassador in Milan and Rome. He began collecting books, which he had splendidly bound and generally lettered in Latin with the legend "Jean Grolier and his friends." In 1537, on his return to France, he became treasurer under Francis I. Ten years after his death his famous library, of about 3,000 volumes, was sold; a number of the books from it are in the Bibliothèque Nationale, Paris, and some in the British Museum. The

Grolier Club, New York, founded in 1884 to encourage the application of art to book production, was named after him. See Bookbinding; consult also *Recherches sur Jean Grolier*, A. J. V. le Roux de Lincy, 1866; Bookbindings, with account of the Grolier Club, J. B. Matthews, 1896.

Gromwell (*Lithospermum*). Genus of annual and perennial herbs and shrubs of the natural order Boraginaceae. Natives of Europe, temperate Asia, and N. America, they have bristly or hairy, alternate leaves, and funnel-shaped, white, blue, or yellow flowers in clusters. Common gromwell (*L. officinale*) has greenish-yellow flowers; in corn gromwell (*L. arvense*), an annual, they are creamy-white; and in purple gromwell (*L. purpureo-caeruleum*) they are bright blue-purple.

Gröner, GENERAL. German soldier. Regarded as Germany's greatest expert in rly. management and supply, he was director of field rlys. in 1916, and in Oct. of that year was placed at the head of the new manpower and munitions dept. of the war office. He became



General Gröner, German soldier

head of the war bureau of the Prussian ministry of war, 1917; but resigned in Aug., 1917, when he was appointed to the command of a division. He succeeded Ludendorff in Oct., 1918, as quartermaster-general, and went to Namur early in Nov. to conduct the great German withdrawal. He was prominent in the suppression of the Spartacist risings in 1919, and became minister of transport in June, 1920.

Groningen, N.E. prov. of the Netherlands. It is bounded N. by the North Sea, N.E. by the Dollart, W. by Friesland, E. by Hanover, and S. by Drenthe. Area, 881 sq. m. The surface is flat, and swampy in the S.E. district, where reclamation is proceeding. There is good grazing land in the N. The prov. is mainly agricultural, though there are industrial and shipping industries and coast fishing is carried on. The few rivers are unimportant. Groningen suffers from sea encroachment and has to be protected by a system of dykes and embankments. The chief towns are Groningen, the capital, Delfzijl, Appingedam, and Winschoten. The principal products are wheat, barley, oats, flour, potatoes, rye, and oil seeds. Pop. 359,950.

Groningen. Town of the Netherlands, capital of the prov. of Groningen. It stands at the junction of the Hunse with the Drentsche Aa, 32 m. by rly. E. of Leeuwarden. Intersected by numerous canals, it has wide streets and gabled houses of the 17th century, and is surrounded by boulevards on the site of the ramparts. Among the principal buildings are the Gothic church of S. Martin, dating mainly from the 13th and 16th centuries, with a lofty tower and a fine organ; the new uni-



Groningen town arms

versity, opened in 1909, with five faculties, 52 professors, and about 500 students; a museum; the Stadhuis, restored in 1787; the 16th century law courts; the 13th century Gothic Aa-Kerk, restored 1500, to which a baroque tower was added in 1712; and several educational establishments. There is a large market.



Groningen, Holland. Exterior of the railway station

Groningen is the most important town in the N. Netherlands, and carries on a large trade in grain and rape seed. Its harbour is accessible to small sea-going vessels. The principal manufactures are textiles, tobacco, cigars, mirrors, furniture, machinery, and gold and silver articles; there are also large printing and lithographic establishments. Groningen is mentioned in history as early as the 9th century, and from the middle of the 11th century it was under the bishop of Utrecht. A member of the Hanseatic League from 1282, it was taken by Prince Maurice of Orange in 1594, and successfully withstood a siege by Bishop Bernhard von Galen of Münster in 1672. The fortifications were razed in 1874. During the Great War there was an internment camp here for members of the British 1st naval brigade, and Belgian troops who retreated into Dutch territory after evacuating Antwerp, Oct., 1914. Pop. 84,448.

Gronov or **GRONOVIVS**. Name of a family of German classical scholars and men of science, all connected with Leiden. Johann Friedrich (1611-71), a native of Hamburg, became professor of history and eloquence at Deventer and of Greek at Leiden. The founder of the Dutch school of Latinists, he edited a number of Latin classica. His son Jakob (1645-1716), professor of Greek literature at Pisa and of belles-lettres at Leiden, is best known by his *Thesaurus Antiquitatum Graecarum*, a learned but undigested mass of information on Greek antiquities. Jakob's son Abraham (1695-1775) was librarian of Leiden, and edited various classical authors. Another son, Johann Friedrich (1690-1760), was a well-known botanist, whose son, Lorenz Theodor (1730-77), was the author of works on zoology, especially ichthyology.

Groom (old Fr. *gromet*, boy). Term applied to a manservant in

charge of horses. In addition to his stable duties, a groom is usually expected to accompany his master when riding. From its earlier and more general use for any male attendant, the word survives as the title of certain officials in the lord chamberlain's department of the British royal household, whose duties are to attend the sovereign. The groom of the stole is next to the vice-chamberlain and in charge of the stole worn on state occasions. His office only exists during the reign of a king. There is a similarly styled appointment in the queen consort's household.

Groom in the word bridegroom, applied to a man about to be, or recently, married, and to his attendant, the groomsman, is derived from the A.S. *guma* man, cognate with the Lat. *homo*, the "r" having intruded as a result of confusion with groom.



Groom. Typical English livery

Groombridge. Village of Sussex, England. It is $3\frac{1}{2}$ m. S.W. of Tunbridge Wells, $3\frac{1}{2}$ m. from London, on the L.B. & S.C.R., which has a junction here, and in the parishes of Speldhurst (Kent) and Withyham (Sussex). The church at Speldhurst has windows by Burne-Jones; that of S. John the Baptist, chapel-of-ease to Speldhurst Church, was formerly a private chapel. From the Cobhams, who had a licence to hold a market in 1285, the village passed to the Wallers. Groombridge Place is an old moated house. Pop. 790.

Groombridge, STEPHEN (1755-1832). British astronomer. Born Jan. 7, 1755, he succeeded to the



S. Groombridge,
British astronomer
From a print

business of a linen-draper in West Smithfield, London, and it was not till 1802 that he was able to study astronomy seriously. In 1806 he began compiling a catalogue of stars down to 8.9 magnitude, within 50° of the N. Pole, and six years later he was made F.R.S. He had made some 50,000 observations, and was engaged upon the correction and completion of his catalogue when attacked by paralysis. His work was published in 1838, under the supervision of Sir George Airy. He died March 30, 1832.

Groome, FRANCIS HINDES (1851-1902). British author. Born at Earl Soham, Suffolk, Aug. 30, 1851, he graduated at Oxford and Göttingen, and took up literature as a profession. He was connected with various encyclopedias, but is principally known from his research in gypsy lore. In *Gypsy Tents*, 1880, was his first contribution to gypsy knowledge, and *Gypsy Folk Tales*, 1899, contained much of value and interest. He also wrote *A Short Border History*, 1887, and *Two Suffolk Friends*, 1895; and edited *Borrow's Lavergho* in 1900. He died Jan. 24, 1902.

Groot or GROETE, GERHARD (1340-84). Dutch reformer. Born at Deventer in the Netherlands, he became a wandering preacher, and founded the Brethren of the Common Life (*q.v.*), a communal society which continued to flourish till the Reformation. He died Aug. 20, 1384.

Groote Eylandt or GREAT ISLAND. Largest island in the Gulf of Carpentaria. It lies off the S.E. coast of Arnhem Land and measures 40 m. in width and length. Its mountainous centre and barren shores have been little explored.

Groote Schuur. Official residence of the premier of the Union of S. Africa. It is near Rondebosch station, about $3\frac{1}{2}$ m. from Cape Town, Observatory Road connecting the two. The house



Groote Schuur, near Cape Town.
The official residence of the premier
of South Africa

was formerly the residence of Cecil Rhodes, who built it, but there appears to have been one here before 1652. Near it is the Rhodes Memorial, a replica of Physical Energy, by G. F. Watts.

Gros, ANTOINE JEAN, BARON (1771-1835). French painter. Born in Paris, March 16, 1771, he studied under Jacques Louis David and in Italy. Having won the approval of Napoleon by his picture of *The Battle of Arcola*, he made him the central figure



Antoine Jean Gros,
French painter

of many of his canvases, now in the Louvre and at Versailles, among them *Napoleon Visiting the Plague-stricken at Jaffa*, 1804, *The Battle of Aboukir*, 1806, *Napoleon at Eylau*, 1808, and *The Battle of the Pyramids*, 1810. After the Restoration Gros continued to paint in the grand manner, his chief work being the decoration of the dome of the Panthéon in Paris. Having lost his hold on the public, he took this so much to heart that he drowned himself in the Seine, his body being found at Meudon, June 26, 1835. Besides battle and historical pieces he painted numerous portraits. See *Eylau*. *Pron.* Grô.

Grosart, ALEXANDER BALLOCH (1827-99). British author, editor, and antiquary. Born June 18,

1827, at Stirling, and educated at Falkirk and Edinburgh universities, he became United Presbyterian minister at Kinross, 1856-65; Princes Park, Liverpool, 1865-68; and Blackburn, 1868-92. He died in Dublin, March 16, 1899. Successful as a preacher and minister, his interest in Puritan theology led him to a life-long study of the prose and poetry of the 16th and 17th centuries, with the result that he made a substantial contribution to the common knowledge of Elizabethan and Jacobean literature, as editor of works and MSS. not before accessible to the general reader.

He issued by subscription the Fuller Worthies Library, 39 vols., 1868-76; Chertsey Worthies Library, 14 vols., 1876-81; Huth Library, 33 vols., 1881-86; and Occasional Issues of Rare Books, 38 vols., 1875-81. He edited the prose of Wordsworth, 1876, and the complete works of Spenser, 1880-88, and Daniel, 1896; and wrote several works of devotion and hymns. His discoveries included poems by Richard Crashaw.

Grosbeak (*Fr. grosbec*). Bird of the finch family, nearly related to the hawfinch. It is common in the pine forests of N. Europe, and is a rare winter migrant to Great Britain.

The male is rosy crimson, the female grey. The bird has a large and massive beak, whence its name. See *Beak*.

Groschen

(Low Lat. *grossus*, big; *denarius*, penny). Obsolete coin of

silver with a considerable admixture of copper formerly current in various parts of N. Germany. Its value was $\frac{1}{30}$ of a thaler, or rather more than a penny. It went out of circulation between 1873-76. Catherine I of Russia struck a copper groschen in 1727, value one kopeck.

Grose, FRANCIS (1731-91). English draughtsman and antiquary. Born at Greenford, Middlesex, the son of an opulent Swiss jeweller, he was Richmond herald, 1755-63, and became F.S.A. in 1757. Prolonged tours resulted in his Antiquities of England and Wales, 1773-87. While collecting the material for his Antiquities of Scotland, 1789-91, he met Burns, who wrote a poem on the subject of his peregrinations warning



Grosbeak. Specimen of the *Coccothraustes melanocephala*.

brother Scots that "a chiel's amang ye takin' notes" He wrote on Ancient Armour and Weapons, 1785-89; Military Antiquities, 1786-88; and Antiquities of Ireland, 1791-97. He died in Dublin, June 12, 1791.

Grosnaia or **GROZNY**. Town of Russia, in the Caucasus. It is in the province of Terek, 60 m. N.E. of Vladikavkaz, on the Sunzha. In the neighbourhood are mineral springs and naphtha beds. It has lost its former military importance, and is chiefly known for its petroleum refineries. Pop. 34,060.

Gross. Numerical unit and measure of quantity. It equals a dozen dozen, i.e. 144, and is used in reckoning many classes of goods. A great gross is 12 gross, i.e. 1,728.

Gross, **SAMUEL DAVID** (1805-84). American surgeon. Born in Pennsylvania, July 8, 1805, he practised in Philadelphia, 1828-33, and in Cincinnati, Ohio, 1833-40, being then appointed to the chair of surgery in Louisville, Kentucky. In 1850 he was transferred to a similar post in New York University, moving thence to the Jefferson medical university, Philadelphia, where he was professor of surgery from 1856 until his death, May 6, 1884. His works include Diseases of the Bones and Joints, 1830; Elements of Pathological Anatomy, 1839; System of Surgery, 6th ed. 1884.

Grossenhain. Town of Germany, in Saxony. It stands on the Röder, 20 m. N.W. of Dresden, and is a rly. junction for Frankfurt-on-Oder, on the Berlin-Dresden line. It is a manufacturing town with important cloth factories. Other industries are connected with machinery, tobacco, leather, and glass works. Grossenhain has been in many hands from time to time, falling successively to the Bohemians and the margraves of Meissen and Brandenburg. There was a battle here in 1813 between the French and the Russians. Pop. 12,217.

Grosseteste, **ROBERT** (c. 1175-1253). English prelate and scholar. Born of humble parentage at Stradbroke, Suffolk, and educated at Oxford, he became chancellor of the university, and in 1224 the first rector of the Franciscan school at Oxford. In 1235 he was elected bishop of Lincoln. He at once set himself to reform abuses in his diocese, and became one of the most resolute champions of the independence of the clergy. In 1239 he quarrelled with the Lincoln chapter over his right of visitation a dispute which lasted six years, and was eventually decided by the pope in his favour. He was a pro-

found Greek scholar, bringing Greek books to England and making Latin versions of them, and was a skilled physicist and mathematician. He died Oct. 9, 1253, and is buried in Lincoln Cathedral. See Life, F. S. Stevenson, 1899.

Grosseto. Maritime prov. of Central Italy, at the head of the Tyrrhenian Sea. It is backed by a branch of the Apennines, rising in Mt. Amiata to 5,470 ft., and includes most of the Maremma. Mostly barren and unhealthy, it yields timber, quicksilver, and Siena earths. The malarial marshes of the ancient Lacus Prelius have been reclaimed, and are now pastureland. The chief rivers are the Ombrone and the Albegna. The island of Elba lies about 13 m. off the coast. The capital is Grosseto. Pop. 155,774. Area, 1,735 sq. m.

Grosseto. Town of Italy, capital of the prov. of Grosseto. It stands near the Ombrone, 39 m. S.S.W. of Siena. Its handsome red-and-white marble cathedral, begun late in the 13th century and restored in 1855, and the 14th century citadel betray Siennese influence. The Municipio holds a rare collection of bronzes, cinerary urns and vases, besides other Etruscan relics. A few miles N.E. of the city are the sulphur baths of the ancient Rusellae, one of the 12 cities of the Etruscan League. Its cyclopean walls and ruins are still extant, although the place was deserted about 1150.

The principal trade is in cattle, cereals, horses, and machinery. Farming implements are made. Dating from the Middle Ages, the bishop's see was transferred here from Rusellae about 1138. In summer the official headquarters are removed to Scansano, 20 m. to the S.E. Malaria has seriously depopulated the town. Pop. 12,442.

Grossetti, **PAUL** (1864-1918). French soldier. He entered the army in 1883, and became a divisional commander in 1914. He took a prominent part in the first battle of the Marne, Sept. 9, 1914, in which he saved the situation at La Fère Champenoise and Mondement. He helped to defeat the Germans on the Yser in Oct. 1914, and with his division rendered valuable assistance to the British at the first battle of Ypres. He was later promoted to command the 16th army corps, and saw service in the campaign in Macedonia, 1917. He died in Paris, Jan. 7, 1918.

Grosslichterfelde. Village of Prussia, Germany. It is 5 m. by rly. S. by W. of Berlin, and is important because it contains a cadet school, which, previous to 1878, was located in Berlin.

Grossmith, **GEORGE** (1847-1912). British actor and entertainer. Born Dec. 9, 1847, the eldest son of

George Grossmith, journalist, entertainer, and lecturer, he became associated with his father as reporter at Bow Street Police Court. In 1870 he

became an entertainer, and in 1877 began his career as actor and singer in Gilbert and Sullivan opera by appearing in The Sorcerer at the Opéra Comique, afterwards taking a leading part in eight more of these pieces at The Savoy. In 1889 he resumed his old career as entertainer, achieving much success at the piano in London, in the provinces, and in the U.S.A. He died at Folkestone, March 1, 1912.

His son, George Grossmith, junr. (b. 1874), made his first appearance on the stage in Haste to the Wedding, at The Criterion, July 27, 1892. From 1901-16 he appeared in musical comedy at The Gaiety, winning success as singer and dancer. After a period of service in the R.N.V.R., he resumed his career as actor and theatrical manager. In 1920 he was associated with Edward Laurillard in the purchase of the Gaiety and Adelphi theatres.

Grossmith, **WEEDON** (1853-1919). British artist and actor. The brother of George Grossmith

(d. 1912), as a young man he studied in the R.A. schools and exhibited at the R.A. and Grosvenor Gallery. In 1905 he appeared on the stage at Liverpool, and shortly after at

New York, and made his first appearance in London at The Gaiety in 1887. In 1891 he produced and acted in A Pantomime Rehearsal, which ran for two years. For the remainder of his life Grossmith maintained his success, which culminated in his own play, The Night of the Party, 1901. His last appearance was in The Misleading Lady at The Playhouse. With his brother George he wrote for Punch The Diary of a Nobody, 1892, repr. with memoir of the brothers by



Geo Grossmith



Weedon Grossmith,
British actor
Russell

B. W. Findon, 1920; and in 1913 published his reminiscences, *From Studio to Stage*. He died June 14, 1919.

Grossular. Variety of garnet, chemically a calcium aluminium silicate. It crystallises in a cubic system, and is green, red, or colourless. It is a characteristic of metamorphic limestones, as in Tirol, and also occurs in ejected blocks from Vesuvius. See Crystallography.

Grossulariaceae. Natural order of (often) spiny shrubs. They are natives of the N. temperate regions and the Andes, of which the gooseberry and currant are well-known examples. They have alternate leaves, and tubular or bell-shaped flowers, the calyx being the conspicuous part owing to the minute size of the petals. The fruit is a berry filled with juicy pulp surrounding the seeds.

Gross-Venediger. Mt. mass of the Noric Alps, in the Hohe Tauern, on the borders of Tirol and Salzburg.

It lies between the Gross Glocker and the Drei Herrn Spitze, and reaches an alt. of 12,010 ft. The Klein-Venediger, adjoining, attains 11,420 ft.

Grosvenor. Name of a family that holds three British peerages. The earliest Grosvenors were found in Cheshire in the 12th century. One of them who lived at Eaton, near Chester, was made a baronet in 1622, and was the ancestor of Sir Richard Grosvenor, made Earl Grosvenor in 1784. The earl's descendants became marquesses and then dukes of Westminster. The second peerage is the barony of Ebury, conferred in 1857 on Lord Robert Grosvenor, a son of the 1st marquess of Westminster. The third, the barony of Stalbridge, was bestowed in 1886 on Lord Richard Grosvenor, a son of the 2nd marquess. He was chief Liberal whip 1880-85, and for many years chairman of the L. & N.W. Rly. He had extensive estates in Dorset, but in 1918 these, which included the towns of Shaftesbury and Stalbridge, were sold by his descendant. See Westminster, Duke of.

Grosvenor Gallery, THE. Picture gallery founded in London in 1877 by Sir Coutts Lindsay of Balcarres (1824-1913), a painter of considerable talent. The object of the gallery was the annual exhibition (by invitation) of pictures by

artists who were supposed, rightly or wrongly, not to enjoy the favour of the R.A., and the type of pictures exhibited at the gallery incurred some ridicule, expressed by W. S. Gilbert in *Patience* (1881) when he sang of "the greenery-gallery, Grosvenor-Gallery, foot-in-the-grave-young-man." In 1883 the gallery enlarged its utilities and was made available for social functions. This led to a secession of artists who established the New Gallery. The Grosvenor Galleries in New Bond Street were opened as a mart for the works of living artists in 1912.

Grosvenor House. Former London home of the duke of Westminster. It is on the S. side of Upper Grosvenor Street, having a fine exterior colonnade, erected in 1842. The house was built for the duke of Gloucester, brother of George III, and here died the duke of Cumberland, of Culloden fame. In its western wing is a superb col-



Grosvenor House. Colonnade and entrance of the former London residence of the duke of Westminster

lection of pictures, including gems by Rubens and Rembrandt, and other Dutch, Flemish, British, and Italian painters. During the Great War, it was headquarters of the ministry of food. It was bought by Viscount Leverhulme, 1924.

Grosvenor Square. One of the great squares of London. It is approached from Park Lane by Upper Brook Street and Upper Grosvenor Street, Mayfair. About six acres in area, it was laid out by William Kent for Sir Richard Grosvenor (d. 1732) in 1695, and completed in 1725. The central gardens occupy the site of Oliver's Mount—whence the adjacent Mount Street takes its name—a redoubt thrown up by the citizens in 1643 on the approach of Charles I after Edgehill.

Since the middle of the 18th century a fashionable quarter, the square was not lighted by gas until 1839. One of its early residents was the 4th earl of Chesterfield, at whose house Dr. Johnson was kept

waiting in an anteroom. At No. 22 William Beckford entertained Nelson; at No. 23 the 12th earl of Derby was married to Elizabeth Farren the actress; at No. 6 Joseph Neeld, M.P., formed his collection of pictures. No. 39 (now 44) was a meeting place of the Cato Street conspirators. Lord Chancellor Hardwicke, Lord Roekingham, Lord North, Henry Thrale, John Wilkes, Lord Stratford de Redcliffe, Bulwer Lytton, the philanthropic earl of Shaftesbury, Dr. Pusey, and J. Pierpont Morgan were among other residents.

Grote, GEORGE (1794-1871). British historian. Born at Beckenham, Kent, Nov. 17, 1794, and educated at the Charterhouse, at 16 he entered his father's bank. He continued his studies despite the discouragement of his father, and read widely in the classics and economics and philosophy. His father was



G. Grote
After S. P. Denning

also opposed to his union with Miss Harriet Lewin, whom he married in 1820. In addition to his work at the bank, with which he was associated for over 30 years, and his literary pursuits, Grote also entered politics, becoming member for the City of London in 1832, and was much interested in the promotion of the university of London.

Among his friends were the Mills, father and son, Brougham, Ricardo, and Bain. In 1843 he retired from the bank and devoted his leisure to the completion of his *History of Greece*, first projected in 1822. Though written as a vindication of democracy, the history, completed in 1856, remains a monument of research and sound historical judgement, enriched by passages of great eloquence. Among other important works of Grote are one on Plato and the other companions of Socrates, 1865, and another (unfinished) on Aristotle, 1872. Grote died June 18, 1871, and was buried in Westminster Abbey.

Grotefend, GEORG FRIEDRICH (1775-1853). German archaeologist. Born at Münden, Hanover, June 9, 1775, he became successively professor at Göttingen, 1797, Frankfurt, 1803, and Hanover, 1821. He was chiefly known as a Latin and Italian philologist until he won lasting fame by his decipherment of the Babylonian cuneiform inscriptions. He died Dec. 15, 1853.

Grotesque. Ancient form of decorative painting or sculpture, in which nature was distorted,



Grotesque creature worked into the architectural ornament of Senlis Cathedral, France

By courtesy of Macmillan & Co.

parodied, or exaggerated. Thus, in one variety, human and animal forms were combined in fantastic fashion and interwoven with flowers and foliage, partly to tone down what might otherwise have been merely repulsive. The idea did not necessarily imply ugliness, but rather something bizarre, with a touch of the absurd and incongruous, in which sense the Romans often introduced it into the decorations of their buildings. The word is French, from Ital. *grollesca*, curious painted work found in grottos. See Dance of Death.

Groth, KLAUS (1819-99). German poet. Born at Heide, Holstein, April 24, 1819, he was the first writer of importance to use Low German as a literary medium. He achieved fame with *Quickborn*, 1852, poems of Dithmarschen life. In 1858 he was appointed lecturer in German at Kiel University, and professor, 1866. He died at Kiel, June 2, 1899.

Grotius, Hugo (1583-1645). Dutch jurist, known in Holland as Huig van Groot. Born at Delft,



H. de grotius

After M. J. Mirevelt

April 10, 1583, his father was a lawyer. He showed extraordinary intellectual abilities and as a boy acquired a wide knowledge of the classics. Having studied at Leiden and in France, he became a practicing lawyer, but found time to write Latin verses and dramas.

In 1603 he was appointed historiographer of the United Provinces; other public positions were also given to him; but his share in the politics of the time led to his fall. Of tolerant spirit, he wished to mitigate the fierce hostility between the religious parties in

Holland, but in this he failed. Regarding the Remonstrants (*q.v.*) as less fanatical than their opponents, he joined and assisted Barneveldt in stating their case. In July, 1618, however, Maurice of Orange made a sudden move against Barneveldt and his party, and Grotius, in 1619, was sentenced to imprisonment for life. He escaped from Loevenstein in 1620, owing to the wit and devotion of his wife; reaching Paris, he lived for some time in poverty in France. After a time his fortunes mended, and having entered the Swedish service in 1634 he was made ambassador to France. He died at Rostock, Aug. 28, 1645.

In exile Grotius wrote his monumental work, *De jure belli et pacis*, published in 1625, in Paris. An earlier work, unpublished until the 19th century, was written by him on this subject in 1604. He wrote other works of the kind, bringing to his task an almost unrivalled fund of learning. He also wrote a good deal on theological questions, and his *Annals of the Netherlands* is the best contemporary account of the revolt against Spain.

His fame rests, however, upon his *De jure*, the foundation of modern international law. It deals not only with peace and war, as the title suggests, but with the powers and duties of states. The main idea which we owe to him is that there is a foundation in morality for states and a test in morality for their activities, which, therefore, do not rest, as earlier writers taught, on the narrower basis of ecclesiastical or Biblical precepts. Grotius visited England and was intimate with the greatest scholars of his day, Casaubon and his master, Scaliger, among them. More than 3,000 of his letters have been published. See *International Law*; consult *De Jure Belli*, Eng. trans. W. Whewell, 1853; *Opinions of Grotius*, D. P. de Bruyn, 1894.

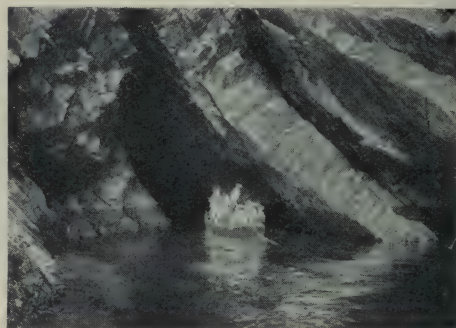
Grotius Society. Learned society founded in 1915. Its object is to discuss the problems of international law arising out of the Great War. Unlike the Institute of International Law, its membership is confined to British subjects, although foreign lawyers are admitted as honorary and corresponding members. It was founded to take the place of the International Law

Association, the activities of which were suspended by the war. Lord Reay was its first president.

Grottaferrata. Village of Italy, in the prov. of Rome. It is 13 m. S.E. of Rome, with which it is connected by electric rly. A Greek monastery was founded here by Nilus in 1004. The 11th century church, rebuilt in 1754 and restored in 1902, has frescoes by Domenichino. The abbot's palace contains local antiquities and art treasures. Wine is produced, and fairs are held on March 25 and Sept. 8. Pop. 1,050.

Grottaglie. Town of Italy, in the prov. of Lecce. It is 13 m. E.N.E. of Taranto and 32 m. by rly. S.W. of Brindisi. Local industries include the manufacture of pottery, chalk quarrying, cotton and silk weaving, and bee-keeping. Wine and oil are produced, and there is trade in grain and fruit. Pop. 11,851.

Grotto (Fr. *grotte*; Lat. *crypta*). Cave or recess in the earth, particularly one made or enlarged artificially for use as a shrine or retreat.



Grotto at Morgat, Brittany: a natural cavern in the rocks only approachable from the sea

On July 25, the festival of S. James the Great, it was formerly the custom of the faithful to fasten a shell in hat or coat and make pilgrimage to the shrine at Compostella to which, according to tradition, his body was translated. Shell grottos with a figure of the saint were set up by the wayside, where those too poor to make pilgrimage could make their offerings to commemorate the day. Children in many countries preserve the custom, though not its purpose, by erecting little decorative shrines of oyster shells and soliciting money with the cry, Remember the grotto. One of many notable grottos is the Dog's grotto, *Grotta del Cane*, by the lake of Agnano, near Naples. Over the floor of this carbonic acid gas rises to a height of some 18 ins., stupefying dogs taken into the grotto. See Capri.

Grouchy, EMMANUEL, MARQUIS DE (1766-1847). French soldier. Born in Paris, Sept. 5, 1766, he



Emmanuel, Marquis de Grouchy, French soldier

joined the Revolutionaries, notwithstanding his aristocratic birth, and assisted in suppressing the royalist rising in La Vendée. He fought in Italy in 1798, and, becoming one

of Napoleon's most trusted leaders, took part in the battles of Hohenlinden, Friedland, and Wagram. He served in the Russian campaign of 1812, and did good service in the retreat after Leipzig in 1813. His failure to appear with his division on the field of Waterloo was said by Napoleon to have lost the battle. After Waterloo he was proscribed and took refuge in the U.S.A., but was permitted to return in 1819, and in 1830 received again his old style of marshal. He died at St. Étienne, May 29, 1847. See Waterloo, Campaign of.

Ground Annual. In Scots law, a payment charged upon certain lands, something like the English ground rent. It is paid on land once the property of the Church, such being the feu duties paid to the lords of erection, the successors of those who received the lands at the Reformation. It is also used for the annual payment made sometimes by builders for the use of land for building purposes.

Ground Bass OR BASSO OSTINATO. Short musical phrase repeated many times with varied treatment. It is usually in the bass part, but is sometimes transferred to an upper part. The ground bass has been used from the 17th century to the present day, and fine examples occur in Bach's well-known Passacaglia; in Purcell's Chaconne in The Fairy Queen and many of his vocal works; in Handel's choruses Envy, eldest born of hell (*Saul*), and To Song and Dance (*Samson*). See Chaconne; Divisions.

Ground Ice. Name given to the natural phenomenon more usually called Anchor Ice (*q.v.*).

Ground Ivy (*Nepeta hederacea*). Perennial prostrate herb of the natural order Labiatae. It is a native of Europe and N. and W. Asia. The trailing stems are 2 ft. or more in length, with opposite, kidney-shaped leaves, round-toothed at the edges. The tubular, blue-purple flowers are produced in whorls of from three to six at the base of the leaf-stalks. It is no relation to the ivy (*Hedera helix*). The



Ground Ivy. Foliage and flowers

plant is bitter and aromatic, and was formerly employed in brewing.

Ground Nut, PEA-NUT, MONKEY-NUT, OR EARTH-NUT (*Arachis hypogaea*). Annual herb of the natural order Leguminosae. It is a native of S. America and the W. Indies. The leaves are broken up into four oval leaflets, and the pea-like flowers are yellow. After pollination the flower-stalk lengthens and curves to the ground, in which it buries the incipient fruit, which there develops into the yellowish wrinkled pods which contain two seeds. These are of great value, not only as a food, but as a source of a liquid oil pressed from them. It is used for lubricating watches and other delicate machinery; also as a substitute for olive-oil, and for burning.



Ground Nut with flower stalks lengthened and burying fruits

Ground Pigeon. Name used for the pigeons classed in the sub-family Peristerinae. The turtle dove is a familiar example. They are less arboreal in habit than some of the other groups, and as a rule have longer legs.

Ground Rent. Name given to the rent paid for the ground on which a house or other building stands, as distinct from that paid for the building. Builders and others often take land on lease, paying usually a fixed annual sum for a fixed term of years. If a

man, having built on the land, i.e. having improved it, lets it to another at a higher price, it is known as an improved ground rent. The taxation of ground rents is frequently called for, under a misapprehension that they escape the usual burdens. Income-tax is paid upon them, and although the ground landlord pays no part of the rates, yet this consideration affects the contract, the ground landlord charging a lower price for his land than he would do were he assessed directly to the rates. See Rent; Single Tax.

Groundsel (*Senecio vulgaris*). Annual herb of the natural order Compositae. A native of Europe and N. Africa, it has succulent



Groundsel. Stem with flower-heads and leaves

stems 1 ft. or 2 ft. in height, with slender leaves cut into irregular lobes and coarsely toothed. The drooping flower-heads are yellow, succeeded by a small globe of fluffy, silky hairs which carry the fruits everywhere.

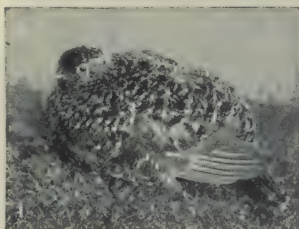
Ground Squirrel (*Tamias*). Popular name for the chipmunk (*q.v.*).

Group Captain. Title of the rank in the Royal Air Force equivalent to that of a full colonel in the army and captain in the navy.

Groups, THEORY OF. Modern development of higher algebra. It deals with the transformation of algebraic forms. The theory of groups of substitutions was suggested by E. Galois, a French mathematician (1811-32); a new theory of groups of substitution



Ground Pigeon. Turtledove, a member of the sub-family



was due to the Scandinavian mathematician Sophus Lie, whose investigations on this subject were published 1888-93. See *Theory of Groups of Finite Order*, W. Burnside, 2nd ed. 1911.

Group System. British recruiting scheme in the Great War. Under the scheme instituted by

Lord Derby in Oct., 1915, the male population was divided into 46 groups, the single men in the first 23 groups according to their ages, from 18 to 40, and married men in groups 24-46. The intention was to call up the groups in turn as they were required. This was the last effort to increase the army by voluntary recruiting, and its failure to supply the enormous number of men required led to the passing of the Military Service Acts in 1916. See *Army, British*; *Compulsory Service*; *Derby Scheme*.

Grouse. Name applied by zoologists to all the members of the family of game birds known as Tetraonidae, which includes more than 30 species; but popularly used in a more restricted sense. Four species of grouse occur in the N. of Great Britain. The ptarmigan, which turns white in winter, is found only in the wilder districts of Scotland; the blackcock, the female of which is known as the grey hen, is much larger, and is said still to occur in the S.W. of England as well as in Scotland; the capercaillie, the largest of all, became extinct in Great Britain in the 18th century, but was reintroduced in 1837 and is now fairly plentiful in Forfar, Perth, and Stirling; the red grouse, or moor cock, is by far the most plentiful, and the bird commonly implied when speaking of grouse.

The red grouse (*Lagopus scoticus*), which measures about 15 ins. in length and weighs from 20 oz. to 30 oz., is found only in the British Isles, and is one of the

very few species that are exclusively British. On the continent of Europe, and in Asia and N. America, it is represented by the very similar willow grouse, and some authorities regard the two as varieties of the same species. But the willow grouse turns white in winter, while the red grouse never does; its note is somewhat different; and its food and habits are not



the same. Anatomically the two birds are identical; the only difference in the summer plumage is that the willow grouse is rather lighter in tone and has white wing quills.

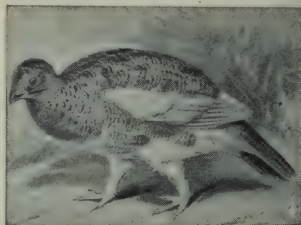
Grouse are found on the moors throughout Scotland and the surrounding islands, except the Shetlands, in the northern counties of England, in some parts of Wales, and thinly throughout Ireland. The birds nest in March on the ground, usually in the shelter of a tuft of heather or other herbage, and the number of eggs varies from six to fourteen. In colour they are usually reddish-yellow, blotched with brown, but they vary greatly. Unlike many game birds, the grouse is monogamous. The food consists mainly of the young shoots of the heather, but grubs and insects are also eaten.

In colour grouse vary considerably. Sometimes, but rarely, the plumage is entirely black; usually a reddish chestnut is the prevailing hue; while in some districts the plumage is not uncommonly spotted with white on the breast and underparts. The colour varies after the moults. The hen moults in spring and autumn, the cock in autumn and winter. See *Blackcock*; *Egg*; *Ptarmigan*.

GROUSE SHOOTING. The two legitimate methods of killing grouse are by shooting them over dogs, and driving the birds to the guns by the aid of beaters. The advantages of the latter method, which is now most in favour, are that the guns can be stationed at fixed positions, and that the fact of

the birds being driven gives a greater chance of the older and stronger birds being killed first. Though never reared and fed artificially like the pheasant, grouse are carefully preserved on the moors and need considerable attention, as wet seasons, overcrowding, and epidemic diseases are very apt to reduce their numbers. The shooting season in Great Britain for grouse extends from Aug. 12 till Dec. 10. See *Sporting Gun*; consult *The Grouse in Health and Disease*, 2 vols., 1912 ed.; *Oke's Game Laws*, L. Mead, 5th ed. 1912.

Grove, Sir COLERIDGE (1839-1920). British soldier. The son of W. R. Grove, a judge, he was born at Wandsworth and educated at Balliol College, Oxford. He joined the 15th Foot in 1863. He served in Egypt in 1882-85, but made his reputation on the administrative side. From 1888-94 he was assis-



Grouse. 1. Red grouse. 2. Ruffed grouse, cock and hen. 3. Ptarmigan in summer plumage

tant adjutant-general and from 1896 to 1901, when he was knighted, he was military secretary at the war office. He died May 17, 1920.

Grove, Sir GEORGE (1820-1900). British writer on music. Born at Clapham, Aug. 13, 1820, he was



Sir George Grove, British writer

educated as a civil engineer. His main interests, however, were in music, and in 1883 he became the first director of the new Royal College of Music and was knighted. He was editor of *Macmillan's Magazine*, 1868-83, edited the first edition of the *Dictionary of Music and Musicians*, and wrote articles on music. Grove, who died May 28, 1900, was at one time secretary of the Society of Arts. See *Life*, C. L. Graves, 1904.

Grove Cell. Primary electric cell very similar to the Bunsen cell and possessing the same characteristics. The Grove differs from the Bunsen cell in that a sheet of platinum, bent to an S form in plan,

takes the place of a carbon rod. Like the Bunsen, the Grove cell gives a high electromotive force and has a low resistance; but it has also the same disadvantages, viz. that noxious fumes are given off and the cell has to be taken to pieces after use. The use of platinum makes the first cost high. To reduce this, porcelain coated with a film of platinum has been used instead of a plate of the metal. See Bunsen Cell; Cell, Voltaic and Primary.

Growing Pains. Popular name for pains in the limbs complained of by young children. Since pain is never produced simply by growth, the complaint of the child should always be investigated, as the symptom may be an indication of acute rheumatism or other serious affection.

Growler. Slang term for a four-wheeled cab. These vehicles were colloquially distinguished from the smarter and brisker hansom cab by the terms growler and crawler, from the surliness of the drivers and the slowness of the horses. Holding four persons and designed to carry luggage, they plied for hire mostly between railway stations. See Cab.

Growth. Gradual increase in size or volume. The chief use of the word is in connexion with organic growth. The study of the growth of animals and plants has provided more fundamental theories of the evolution of mankind than the study of any other subject. Growth is a physico-chemical process. and here again its study has resulted in great advances in chemical and physical research. The various aspects of organic growth are dealt with in this Encyclopedia under Biology; Cell; Embryology; Physiology; Plant, etc.

In medicine the term is used in such expressions as a malignant growth, e.g. cancer, and for any abnormal increase in any part of the body, tumours, etc. In crystallography crystals grow by constant additions, in a definite way, to their size, always; however, retaining the same general shape.

Groyne. Projection built out to sea to obstruct the continuous drift of shingle or sand. On sea coasts where tidal currents prevail, littoral drift occurs, i.e. a gradual travel of shingle or sand along the shore, with usually a preponderating tendency in one direction. This may result in a give-and-take effect on straight stretches, or according to the configuration of the coast-line and other influencing factors, it may result in certain localities being denuded of their share of detritus and rendered

more liable to erosion by the sea. To check this action groynes are projected from the shore, generally down to about low-water mark, against which detritus such as shingle or sand heaps itself on one side. Groynes are usually constructed of heavy timber planks bolted to and supported by driven piles and raking struts for resisting the pressure of the heaped-up mass. Sometimes they are built of masonry. Local conditions must be carefully studied, since unsuitable design or wrong setting of the groynes may make matters worse than before. See Breakwater.

Grubber. Term loosely applied to various forms of cultivator. By it the ground is deeply stirred, without being turned over as it is by ploughing. See Cultivator; Hoe.

Grub Street. Old name of a London thoroughfare in Cripplegate (q.v.), E.C., running N.E. from Fore Street to Chiswell Street, and known since 1830 as Milton Street. Described by Stow as having been inhabited by bowyers, fletchers, and bow-string makers, and satirised by Pope and Swift as the home of the poorest and most helpless of literary drudges—whence the application of its name to writers and literary efforts of a mean character—the thoroughfare is to-day notable for its business establishments. John Foxe, the martyrologist, once lived in Grub Street. See Modern Grub Street, A. St. John Adcock, 1913.

Gruel (late Lat. *grutellum*, meal). A semi-liquid, easily digested food made with oatmeal and milk, or milk and water, in the proportions of a tablespoonful of oatmeal to a pint of milk. The milk is boiled, and the oatmeal, previously moistened with a little milk, is added to it. It is stirred till it boils, and then allowed to simmer for about half an hour, when it is strained and sweetened.

Grün, ANASTASIUS. Name taken by the Austrian poet Anton Alexander, Count von Auersperg (q.v.).

Grünberg. Town of Germany, in Silesia. It stands in a plain, 35 m. by rly. N.W. of Glogau. It has textile industries and varied manufactures, including machinery, leather, and tobacco, and a large wine trade, German champagne being made from the yield of the vineyards in the district. Pop. 23,168.

Grundtvig, NIKOLAI FREDERIK SEVERIN (1783–1872). Danish theologian, historian, and poet. Born Sept. 8, 1783, the son of the pastor of Udby, Zealand, he was educated in Copenhagen. In 1821 he was made pastor of Præstø in Zealand and in 1822 chaplain of S. Saviour's Church, Copenhagen.

In 1825, in answer to a book by Clausen, called Catholicism and Protestantism, Grundtvig wrote his famous protest against the rationalistic tendency of the day in The Church's Reply. Clausen retaliated by exposing Grundtvig's unorthodoxy, and the controversy ended with the latter's deprivation of his chaplaincy in 1826. In 1839 he returned to clerical work, and in 1861 he was made bishop. He died Sept. 2, 1872.

He wrote, Northern Mythology, 1808; A Summary of Universal History, 1812; Roskilda Rhymes and Roskilda Saga, historical poems, 1814; Songs, 1815; Northern Verses, 1838; and A Handbook of Universal History, 1833–42. Grundtvig was famous as an educational reformer. His system of continuing the work of the Danish Elementary Schools (Folk-skola) in High Schools (Folkshøjskole) has borne wonderful fruit.

Grundy, Mrs. In Great Britain, the personification of conventional respectability. The name is taken from Thomas Morton's comedy, Speed the Plough (1798), in which one of the characters frequently refers to Mrs. Grundy—"What will Mrs. Grundy say?"—as the embodiment of the social proprieties.

Grundy, SYDNEY (1848–1914). British dramatist. Born at Manchester, March 23, 1848, and educated at Owens College, he was called to the bar and practised, 1869–76, but was early drawn to writing for the stage. His first play, A Little Change, was produced at the Haymarket Theatre, London, in 1872. He is chiefly associated with skilful adaptations from the French. The Bells of Haslemere (with Henry Pettitt), 1887, and A Pair of Spectacles (from Les Petits Oiseaux of Labiche and Delacour), 1890, were extremely successful. Others of his many pieces were Sowing the Wind, 1893; A Bunch of Violets, 1894; The Musketeers, 1899; The Garden of Lies, 1904; Business is Business, 1905; The Diplomats, 1905; A Fearful Joy, 1908. He died July 4, 1914.



Nikolai Frederik Grundtvig,
Danish theologian
After C. A. Jensen



Sydney Grundy.
Lafayette

Grurie. Wood of France, in the dept. of Meuse, lying between Vienne-le-Château and Varennes, forming part of the Argonne forest. Fighting continued here throughout the Great War, beginning in Nov., 1914, when the French repelled fierce German attacks in the wood, and ending in the great Franco-American battles of the autumn of 1918. See Argonne, The Campaigns of 1914-18.

Grus (Lat., crane). Southern constellation, named by Dirck Keyser. It is just south of Piscis Australis. See Constellation.

Gruyère, LA. District of Switzerland, in the canton of Fribourg. A pastoral region, it lies in the Saane valley and is celebrated for its cheese. The inhabitants are mostly French-speaking and Roman Catholic. The chief town is Bulle (pop. 3,400), with a 13th century castle, but the historic capital is Gruyères, standing on a hill at an alt. of 2,713 ft., with a fine old castle of the counts of Gruyères, who became extinct in the 16th century; it is restored, and contains frescoes and old weapons.

Guacharo OR OIL BIRD (*Steatornis caripensis*). Remarkable bird, native of the N. part of S.



Guacharo. Specimen of the Trinidad species

America, related to the nightjars. The size of a crow, a feeder on hard nuts and fruits, it is entirely nocturnal, sleeping during the day in dark caverns. Little is definitely known about the nesting of the birds, but the young are extensively used as a food by the S. American Indians, and also as a source of oil. It is brownish grey in general colour, and leaves its breeding and sleeping caverns at night with a loud clicking note. These peculiar birds, which have become objects of great interest to naturalists on account of their nocturnal methods of feeding, are found in Trinidad, Venezuela, and Ecuador.

Guaco. Name given by S. American Indians to several plants, but confined by naturalists to a climbing Composite plant of the order Eupatoriaceae. The plant is remarkable for its supposed property of making anyone who eats its leaves immune from snake bites.



Guadalajara, Mexico. The cathedral, built in the early 17th century, seen from the south-west

Guadalajara. Prov. of Central Spain. It is bounded N. by the prov. of Soria, S. by Cuenca, E. by Zaragoza and Teruel, and W. by Madrid. Mountainous in the N. and E., its highest elevations rise nearly 7,000 ft. in the Guadarrama range on the N. frontier; elsewhere it is an undulating plateau. The prov., which is served by the Madrid-Zaragoza Rly., is drained by the Tagus and its tributaries, the Tajuna, Jarama, Henares, and Guadiela.

Silver and salt are worked, and iron and lead exist; but the chief industries are sheep and goat rearing and agriculture. Olive oil, wine, silk, flax, and saffron are produced. Area, 4,676 sq. m. Pop. 214,316.

Guadalajara. Town of Spain, capital of the prov. of Guadalajara. It stands on the left bank of the Henares, at an alt. of over 2,000 ft., 33 m. E.N.E. of Madrid, by the Madrid-Zaragoza Rly. The chief buildings are two 15th century palaces, and the old Mendoza palace, all dilapidated; the church of San Francisco, with a mausoleum, or Pantheon, in which many of the Mendoza family lie buried; and a 16th century town hall. There are besides a museum, a library, a school for military engineering, a few quaint churches, and a military aerodrome. Woollen fabrics, soap and bricks are manufactured.

Evidences of Roman activity include the foundations of a fine stone bridge and of the aqueduct across the river. The Roman and Visigothic Arriaca or Caraca, its present name is derived from the Moorish Wad-al-hajarah, or Valley of Stones. Captured by the Moors in 714, the town passed to Castile in 1081. Pop 12,178.

Guadalajara. City of Mexico, the capital of the state of Jalisco. Situated near the Rio Grande de Santiago, at an alt. of 5,095 ft. above sea level, it is 280 m. W.N.W. of the city of Mexico, and is served by a branch of the Mexican Central Rly. The city is planned on modern lines, and is lit by electricity. The see of a bishopric, its cathedral, completed in 1618, is one of the most magnificent ecclesiastical structures in the country and contains a celebrated painting by Murillo. Other buildings are the university, the bishop's palace, the government building, a public library containing nearly 30,000 volumes, an academy of fine arts, and several educational institutions.

A considerable trade in the agricultural produce of the district is carried on, and the city has important steel, iron, and glass industries, besides manufactures of cottons, woollens, flour, leather, and art pottery. It has suffered from several earthquakes. In July, 1914, Guadalajara was surrendered to the Constitutionalists by the Federal forces. Pop. 119,468.

Guadalaviar (Arab. *Wad-el-abyad*, white river). River of E. Spain. It rises in two headstreams in the Sierra Albarracin and the Sierra de Gudar, uniting at Teruel, where it bends S. and then E.S.E., to discharge its waters into the Mediterranean 2 m. beyond Valencia, after a course of about 150 m. The right-hand stream, above Teruel, is known as the Alfambra. The Guadalaviar is noted for its romantic scenery. Near its mouth the river is canalised, and it forms part of the water supply of the city of Valencia.

Guadalcazar. Town of Mexico, in the state of San Luis Potosí. It is situated 45 m. N.E. of the city of San Luis Potosí, in the vicinity of quicksilver mines. Pop. 7,500.

Guadalquivir (Arab. *Wad al-kebir*, great river). River of S. Spain, the ancient Bætis. It rises by various headstreams in the mts. in the E. of the prov. of Jaén, and flows first N.E., then in a W. and S.W. direction, emptying into the Atlantic about 20 m. N. of Cadiz. Its length is 360 m. Second only to the Ebro in importance, it waters, with its tributaries, most of Andalusia. It flows with a full stream all the year round, being fed in summer by the melted snow from the mountains and by heavy rains in winter. The tide is perceptible as far as Seville, which can be reached by vessels up to 1,000 tons, a distance of 70 m., while Córdoba can be reached by small craft.

Principal tributaries are the Genil, Guadiana Menor, and the Guadajoz on the left bank, and the Guadalquivir and the Jandula on the right. Near its mouth the surrounding district, called Las Marismas, is marshy, caused by the river overflowing its banks, and, before Seville is reached upstream, it branches, forming the islands of Isla Mayor and Isla Menor. The drainage area is computed at 2,900 sq. m. See Córdoba.

Guadalupe. River of Texas, U.S.A. Rising in the S. of Kerr co., it flows E. and S. by E. and bifurcates about 20 m. from its mouth, one branch joining the San Antonio river and the other flowing into San Antonio Bay, an arm of the Gulf of Mexico. Its length is 250 m.

Guadalupe Hidalgo. Village of Mexico, about 3 m. N. of the city of Mexico. It has a collegiate church, and a shrine resorted to by pilgrims. By a treaty concluded here Feb. 2, 1848, Mexico ceded New Mexico and Upper California to the U.S.A. and agreed to the Rio Grande as the boundary line.

Guadarrama, SIERRA DE. Mountain range of North-Central Spain. From the W. the mountains traverse the centre of the prov. of Avila and then mark the frontier between the provs. of Segovia and Soria on the N. and Madrid and Guadalajara on the S. They trend from S.W. to N.E., and divide the valleys of the Douro and Tagus. The loftiest point is the Pico de la Peñalara, with an alt. of nearly 8,000 ft. The extensions on the E. and W. are known as the Sierra de Gredos and the Sierra Moncayo respectively.

Guadeloupe. Two islands of the Lesser Antilles, W. Indies, forming a French colony. Situated

in the W. Atlantic, S. of Antigua and N. of Dominica, the two islands are separated by a narrow strait called Rivière Sallée. The large western island, Guadeloupe proper, is called Basse-terre, the eastern being known as Grande-terre. Total area, 722 sq. m. Basse-terre is of volcanic origin, and a range of mts. forms its backbone from N. to S. Among the volcanoes the most famous is La Soufrière (alt. 5,000 ft.), last active in 1843, others being Les Deux Mamelles, and La Grosse Montagne. Grande-terre is of coralline formation, and its surface is fairly level, nowhere exceeding 500 ft. above sea level.

There are no rivers of any importance, as they are apt to dry up in summer, leaving only shallow pools. Forests of valuable timber abound, and mangroves flourish on the swampy coast. The soil is extremely fertile, the chief products being coffee, cacao, sugar, vanilla, tobacco, bananas, cereals, and sweet potatoes. Rum is distilled and exported. The climate, though hot, is not unhealthy, but the colony is subject to destructive storms. The principal port is Pointe-à-Pitre, at the S. entrance to the Rivière Sallée, and there are safe anchorages in the roads of Basse-terre and in the Bay of Mahault. There are five dependencies, which embrace the islands of Marie Galante, Désirade, St. Martin, Les Saintes, and St. Barthélemy, with an area of 688 sq. m.

The seat of the government is at Basse-terre (*q.v.*), a town of 8,656 inhabitants. There is steamer connexion with France, and a wireless station at Destréllan was opened in 1918. The colony is administered by a governor, assisted by a council, and is represented by a senator and two deputies. Pop. 212,430, of whom 3,461 were French born, 12,306 foreigners, and the remainder blacks.

Guadeloupe was discovered by Columbus in 1493. It was taken in 1635 by the French, who relinquished it to the British in 1759. It changed owners many times during the next 50 years, and was finally ceded to France at the peace of 1814.

Guadiada. River of S. Spain, the ancient Anas. It rises in headstreams in the provs. of Cuenca and Albacete, and flows, partly underground, generally in a W. direction, through the provs. of Ciudad Real and Badajoz. From the city of Badajoz (*q.v.*) it flows S.S.W., forming for nearly 40 m. the boundary between Badajoz and the Portuguese prov. of Alemtejo. Continuing through Portuguese territory, it bends S. and S.S.E. along the fron-

tier of the Portuguese prov. of Algarve and the Spanish prov. of Huelva, to fall into the Atlantic between Villa Real de San Antonio in Portugal and Ayamonte in Spain. Its length, including its principal headstream the Zancara, is about 500 m. The chief tributaries are the Jabalón, Cobres, Ardilla, Zujar, Rucacas, and the Bullaque. It is only navigable for 40 m. from its mouth, which is nearly choked by shoals. At Mertola, the head of navigation, the river is spanned by a Roman bridge of 81 arches, built by Trajan. It drains an area of about 32,000 sq. m.

Guadix (Arab. *Wad Ash*, water of life). City of Spain, in the prov. of Granada. It stands on the N. slope of the Sierra Nevada, a junction on the Granada-Almería Rly. It has ancient walls and a ruined Moorish castle, and its cathedral (modern) is built on the site of a mosque. There is trade in brandy, cotton-wool, flax, and cereals; manufactures include building materials, earthenware, hats, etc. There are mineral springs and iron and copper mines in the vicinity. Once covered with water, the whole undulating district is intersected by gullies cut by the retreating floods. Guadix la Vieja, 5 m. to the N.W., the Roman Acci, is the traditional seat of the first Iberian bishopric. Pop. 13,820.

Guaduas. Town of Colombia, in the prov. of Cundinamarca. It stands near the river Magdalena, 45 m. N.W. of Bogotá. At an alt. of 3,300 ft., it is a centre of sugar, coffee, and fruit cultivation. There are large asphalt deposits in the surrounding localities. Pop. 9,000.

Guaiaicol. Colourless liquid occurring as a constituent of beechwood creosote from which it is separated by distillation and subsequent purification. It is employed in medicine for treating the early stages of tuberculosis of the lungs. It possesses antiseptic and antipruritic properties.

Guaiaicol Carbonate. Crystalline substance prepared by the action of carbonyl chloride upon sodium guaiacolate. It is administered in cases of rheumatoid arthritis, and also in phthisis, bronchitis, and typhoid.

Gualdo Tadino. Town of Italy, in the prov. of Perugia. It stands on a spur of the Apennines, at an alt. of 1,750 ft., 22 m. by rly. N. of Foligno. A walled town, it has a cathedral, and the town hall contains pictures by Nicolo Alunno. There are manufactures of earthenware and silk, and trade in millstones, cereals, and olive oil. In the neighbourhood are scanty remains of the ancient Tadinum, where

Narses, one of Justinian's generals, defeated Totila the Ostrogoth in 552. Pop. 10,448.

Gualeguay. Town of Argentina, in the prov. of Entre Rios. It stands on the navigable river Gualeguay, 8 m. by rly. N.E. of Puerto Ruiz. It has tanneries, flour mills, slaughter houses, and meat curing and soap factories. Pop. 9,000.

Gualeguaychú. Town and river port of Argentina, in the prov. of Entre Rios. It stands on the Gualeguaychú, 10 m. from its entry into the Uruguay. It is the terminus of the Paraná-Concepción Rly., carries on a brisk trade along the river, and manufactures meat products. Pop. 17,880.

Guam. Largest and most southerly of the Ladrone Islands, Pacific Ocean, belonging to the U.S.A. It lies in lat. 15° N. and long. 144° 45' E., has a length of 32 m., and a breadth varying from 4 m. to 10 m., area about 225 sq. m. It is low and of coral formation in the S., and hilly in the N. The climate is warm but healthy; earthquakes are common, but not often destructive. Densely wooded and well watered, it yields coconuts, bread-fruit, rice, oranges, sugar, maize, coffee, and valuable timber. Cattle and buffaloes are reared.

The capital is Agaña, and the port of entry Piti. Guam is strongly garrisoned and is administered by a governor, who is commander-in-chief and commandant of the naval station. It has a wireless telegraphy station and cable and regular steamship communication with the U.S.A. Guam was taken from Spain by the U.S.A. in 1898, and slavery was abolished in 1900. Pop. 14,344, including 220 whites.

Guan (Penelope). Group of game birds. Found in S. America, they include about 15 species. They are large birds, nearly related to the curassows, and usually have naked throats and wattles. They are found in the forests, and go in large flocks, except in the nesting season. They vary considerably in colour from green to brown; and most of them are amenable to domestication.

Guanabacoa. Town of Cuba. Situated about 6 m. by rly. E. of Havana, of which it is a residential suburb, it has a theatre, a hospital, and medicinal springs. An old town, formerly occupied by Indians, it was chartered in 1743, and captured by the British in 1762. Pop. 14,500.

Guanaco or **Huanaco** (*Auchenia huanaco*). Species of llama. Ranging from Peru to Patagonia, it is rather larger than the vicuña, a good specimen being rather more

than 4 ft. high at the shoulder. Guanacos live in large herds in the mountains and are difficult to approach, though in captivity they are easily domesticated. The term llama is usually applied to a domesticated breed of this species. It has the curious habit of resorting to certain places at the approach of death, and the ground in these "cemeteries" is often white with its bones.

Guanajay. Town of Cuba. The terminus of a branch rly. from Havana, 36 m. N.E., it is a favourite health resort. Considerable trade is carried on in the local products, chiefly sugar and tobacco. Pop. 6,500.

Guanajuato. Inland state of Mexico. Situated on the central plateau at an alt. of about 6,000 ft., it is one of the most thickly populated states and has an area of 10,950 sq. m. Mountainous in the N., it is watered by the Lerma and its tributaries, and contains several lakes. Gold, silver, tin, lead, mercury, and copper are extensively worked. Stock-rearing and agriculture are important industries, and cotton and woollen goods, flour, beer, and spirits are manufactured. The state is served by the National and Central Rlys. Guanajuato is the capital. Pop. 1,045,700.



Guanaco, the wild llama found in various parts of South America

Guanajuato or **Santa Fé de Guanajuato.** City of Mexico. The capital of Guanajuato, 160 m. N.W.

of the city of Mexico, it is situated 6,250 ft. above sea level, on both sides of the Cañada de Marfil, a narrow defile. A branch line to Silao connects it with the main Mexican Central Rly. Among the principal buildings are the Alhóndiga de Granaditas, built for a public grain store and now the prison, the cathedral, the mint, the government palace, a college, and several monasteries. The silver mines were the most valuable in the country, but increasing depth has made them difficult to work. The chief manufactures are woollen and cotton goods, chemicals, soap, pottery, and flour. Guanajuato was founded in 1554, and suffered great damage in the war of independence during which it was taken in 1810. Pop. 35,700.



Guanajuato. Market place in the capital city of the Mexican state

Guanare. Town of Venezuela, capital of Portuguesa state. It stands near the river Guanarito, 50 m. S.E. of Trujillo. Founded in 1593 it is an important centre of a coffee, sugar, and cattle producing district. Pop. 11,000.

Guanches. Aboriginal people of the Canary Islands. Descended from a Libyan immigration into Tenerife by sea in the dawn of history, they were subsequently affected by other arrivals, especially in Grand Canary. Early Mediterranean—perhaps Phoenician—traders brought some cultural elements of Egyptian origin, especially the practice of embalming. Their social institutions, polyandry, abandonment of the aged, separate

paths for the sexes, and their non-metallic technology (rough pottery, bone and shell ornaments, stone and wood implements) were determined by their insulation. Mastered by Spain in the 15th century, they form the latent substratum of the present hispanified population of the archipelago.

Guanidine. An alkaline substance with a caustic taste which occurs in vetch seedlings and sugar beet. It was prepared originally by the oxidation of guanine, and hence received the name guanidine. Guanidine, which is a poisonous substance, forms a series of crystalline salts with acids.

Guanine or **IMIDOXANTHINE.** White powder prepared from Peruvian guano and the pancreas of various animals. It is insoluble in water, alcohol, or ether, and has both acid and basic properties.

Guano (Peruvian *huana*, dung). Name originally given to the accumulated excreta of birds found principally upon the shores and islands of the South American coast, chiefly Peru and Chile, and little frequented islands in the Pacific Ocean. The original deposits of land and sea birds have been much depleted by commercial demand, and artificial substitutes, chiefly of German origin, are largely employed. The principal ingredients of guano are phosphorus and ammonia, and compounds which have these elements as a basis illustrate the difference between a natural manure and a fertiliser. One is the natural excreta of the bird or animal, the other a chemical substitute.

Guantánamo. Town of Cuba. Situated in the S.E. of the island, it is about 10 m. from Guantánamo Bay, and is connected by rly. with Santiago, 40 m. to the W., and Caimanera, its port, 12 m. to the S. Leased to the U.S.A. as a naval station in 1903, it has a large and safe harbour, and carries on a considerable export trade in sugar, coffee, and lumber, the products of the locality. Guantánamo was occupied by a British naval force in 1741, and was settled by French emigrants from Haiti about the beginning of the 19th century. Pop. 60,200.

Gupay or **RIO GRANDE.** River of Bolivia, tributary to the Mamoré. Rising in the dept. of Cochabamba, it flows S.E. and then N.W., receiving the Piray and the Yapacani on its right or S. side. The mainhead stream of the Mamoré, it is often called the Rio Grande or Great River. Its length is about 550 m.

Guporé or **ITÉNEZ.** River of Brazil. It rises in Matto Grosso, and flows N.W., joining the Ma-

moré. For part of its course it forms the boundary between Brazil and Bolivia. It has a length of about 940 m., and is navigable for small craft to the town of Matto Grosso.

Guarana (*Paullinia sorbilis*). Climbing shrub of the natural order Sapindaceae. It is a native of Brazil, and has alternate, compound leaves, tendrils, and small whitish flowers in sprays. The pear-shaped fruit is three-celled, each cell containing a single seed partly enveloped in an aril (like the mace of nutmeg). These seeds are dried and ground to a fine powder, moistened and kneaded into a dough which is rolled into sticks 6 ins. or 8 ins. long. It is grated into sugar and water, and drunk as a beverage. Its essential principle is identical with that of tea, and it is supposed to ward off all sorts of disease.

Guarani (Caraió, warrior). Term loosely applied to a group of S. American Indian tribes of allied speech, belonging to the Caraió race. They are round-headed, of medium height, and massively built. The light-brown tint of the S. Brazil forest tribes becomes darker westward. The Bolivian tribes retain the long octagonal huts, roomy canoes, long bows and arrows, and body-paint of the early Caribs. See Chiquitos; Chiriguano; Cocamas; Omaguas.

Guarantee (old Fr. *garantie*, warranty). Term of English law. It means a promise to be answerable for the debt, default, or miscarriage of another. Guarantee necessarily supposes three parties and two obligations: (1) the creditor or person with whom the principal obligation is entered into; (2) the principal debtor, or person who enters into an obligation with the creditor; and (3) the surety or guarantor, who enters into a secondary obligation with the creditor that the principal debtor shall perform his obligation.

The obligation guaranteed may be a mere debt, or it may be the performance of a contract, e.g. when someone guarantees that another shall do certain work in a certain way, or in a certain time. The common fidelity guarantee is merely a contract to guarantee the faithful carrying out of his contract by a servant, etc. A guarantee must, under the Statute of Frauds, be evidenced by writs signed by the guarantor. A guarantee is a contract requiring the utmost good faith. The creditor must disclose everything he knows which might affect the mind of the guarantor, e.g. if A is to guarantee the honesty of a servant of B's, and B knows, and does not tell A, who does not

know, that the servant has previously been guilty of theft, the guarantee is bad. During the currency of the guarantee the creditor must not deal with the principal debtor behind the guarantor's back so as to make the guarantee more onerous. The Partnership Act, 1890, provides that a continuing guarantee given to a firm or to a third person in respect of the transactions of a firm is, in the absence of agreement to the contrary, revoked as to future transactions by any change in the constitution of the firm, to or in respect of which the guarantee was given.

Guarantee Association. Society for guaranteeing persons against loss. In the United Kingdom the most usual kind are those that, in return for annual payments, undertake to make good any defalcations on the part of persons occupying positions of trust, e.g. a cashier. In the United States there are many societies that guarantee titles to land, rents, trade debts, investments, and things of that kind. See Fidelity Guarantee; Insurance; Lloyds.

Guard. Word used in several senses, generally with the idea of protection. In one sense the guard are the soldiers on duty to protect the person or residence of the sovereign, or military headquarters. In London and Windsor mounting the guard and changing the guard are ceremonies of some interest. At the Horse Guards, Whitehall, the ceremony is performed at 11 every morning. From guard comes the word guards to denote regiments of soldiers, although yeomen of the guard is an example of the older use of the word. Armies on the march usually include an advance guard and a rear guard. See Guards; Sentinel.

Guarda. District of Portugal, in the prov. of Beira. Situated S. of the river Douro, it is bounded on the E. by the Spanish prov. of Salamanca. The Serra da Estrela traverses the S. part of the district, which is well watered and productive, containing several important towns. Guarda is the capital. Area, 2,116 sq. m. Pop. 271,816.

Guarda. City of Portugal, capital of Guarda district. It is the highest inhabited city in the peninsula, standing at an alt. of 3,369 ft. on the N.E. slopes of the Serra da Estrela, 105 m. by rly. N.E. of Coimbra. Enclosed by ancient walls, it has a ruined castle, built as a "guard" against the Moors, hence the name. The stately cathedral dates from the 16th century, and there is a large sanatorium. Pop. 6,500.

Guardafui, CAPE. Most easterly portion of the African continent; it is situated in Italian Somaliland. A bold and commanding headland, it presents the appearance of a crouching lion when approached from the S. The surrounding country is rocky and barren, but

two or three small coast villages are situated near the cape.

Guardant.

In heraldry, a four-footed beast shown standing sideways, with

its face turned to the spectator. If walking past in profile it is passant, if looking backwards regardant.

Guardi, FRANCESCO (1712-93). Venetian painter. Born in Venice, he was a pupil of Canaletto. His master's rendering of architecture was firmer and more accurate, but Guardi was a better colourist, and depicted atmospheric effects with truer feeling, and water with greater buoyancy. There are several good examples in the National Gallery, London.



Francesco Guardi,
Venetian painter

Guardian (old Fr. *garder*, to guard). Word meaning literally one who guards or protects another. It is used in two main senses.

In English law a guardian is a person appointed by the father or by the court to look after the person of an infant. The father can appoint a guardian by his will, but cannot oust the mother, who will act with the father's nominee. A guardian can forbid his ward's marriage, control his education, and limit his pocket money, and generally takes the place of the father. If the ward is refractory the guardian can make him a ward of court by applying to the Chancery Division. A guardian *ad litem* is a person appointed by the court to represent an infant defendant. A guardian is not allowed to make a profit out of his office, and his duty is to see that the ward is brought up in a manner befitting his station in life. A guardian cannot interfere with the ward's religion, which must be that of his father until he is old enough to choose.

In England, guardians of the poor are the men and women elected by the ratepayers to look after the poor, educate the chil-

dren, manage the workhouses, etc. In each union of parishes they form a board of guardians. They were established by an Act of 1834, and until 1894 were nominated in addition to elected guardians. At that time, also, the boards of guardians in rural districts were made virtually identical with the rural district councils. *See* England: Local Government; Health, Ministry of; Poor Law.

Guardian, THE. London weekly newspaper. It was established Jan. 21, 1846, a few weeks after the secession of Newman to the Church of Rome, to provide a rallying point for the Tractarians who remained loyal to the Church of England, and to vindicate its catholic position. The founders included Frederick Rogers (afterwards Lord Blackford), R. W. Church (afterwards dean of S. Paul's), and the Rev. J. B. Mozley. Interpreting the word "catholic" liberally, The Guardian endeavours to be the organ of the whole Church. It devotes space to literature, music, and art, and was described by W. E. H. Lecky in 1899 as reflecting "the best intellectual influences of the time." The editorship was originally in commission among the founders, supported by the managership of Martin Sharp. Later editors have been D. C. Lathbury, 1883-99; Canon Walter Hobhouse, 1900-5; and J. Penderel-Brothurst. In 1903 it incorporated The Churchwoman, founded in 1895.

Guardian Angel. One of a number of celestial beings who, in Jewish, Christian, and Moslem belief, act as guardians of the human race. In the early Christian Church it was believed that each individual was under the care of a particular angel, also that a good angel and a bad angel were in constant conflict for the possession of each man's soul. Of Biblical references, Gen. xxiv, 7, 40; xlviii, 16; Ex. xxiii, 20, 23; xxii, 34; xxxiii, 2; Ps. xci, 11; Dan. iii, 25, 28; vi, 22; Matt. xviii, 10; Rev. i, 20; ii, 1, are among those cited in this connexion. In the N.T. the most notable reference is Matt. xviii, 10.

The theme of the guardian angel is frequent in poetic literature, e.g. Shakespeare's "Angels and ministers of grace defend us," Hamlet i, 4; the "Holy angels guard thy bed" of Watts's Cradle Hymn; and the lines of Samuel Rogers's Human Life:

A guardian angel o'er his life presiding,
Doubling his pleasures, and his cares dividing.

Similar ideas of celestial guardianship are associated with the stars, e.g. Præd's "A star before the

darkened soul, To guide, and gladden, and control." Note also Judges v, 20, "the stars in their courses fought (for Israel) against Sisera." *See* Angel.

Guards. In the military sense, soldiers of superior type, prestige, and privilege. They were originally the bodyguard of emperors and kings, and in Britain and other countries the nucleus of the standing army. Famous bodies of Guards were the Praetorians at Rome, the Gardes du Corps and Swiss Guards in the service of the kings of France, the old and young Guard of Napoleon, and the Papal Guard. Before the Great War the Prussian Guard was the *corps d'élite* of the German army, while the Russian and other armies had guard regiments.

In England the kings had their bodyguard from early times, and the yeomen of the guard and the king's bodyguard for Scotland are survivals of that period. The existing Guards date from the time of Charles II, and were then divided into horse and foot. The horse guards consist now of three regiments, 1st and 2nd Life Guards, and Royal Horse Guards, collectively known as the household cavalry. The foot guards are the three old regiments, 1st, 2nd, and 3rd, or Grenadier, Coldstream, and Scots Guards, to which the Irish Guards were added in 1902 and the Welsh Guards in 1915. During the Great War a new unit, the Machine Gun Guards, was established. Together they form the brigade of Guards, which has its depot at Caterham. To this, men of superior physique only are admitted. The title of Dragoon Guards is merely a name given to certain cavalry regiments. Memorials to the Guards' services in the Great War are to be erected on the Horse Guards Parade, London, and in Holy Trinity Church, Windsor. *See* Army; Butler, Lady.

Guarico. State of Central Venezuela, lying S. of Miranda. It was formed in 1901 out of a portion of the state of Miranda. Area about 25,500 sq. m. Its capital is Calabozo, situated on the Rio Guarico, a tributary of the Orinoco (*q.v.*). Pop. 220,488.

Guarini, GIOVANNI BATTISTA (1537-1612). Italian poet. Born at Ferrara, Dec. 10, 1537, he was for some time a professor at the university there. At the age of 30 he entered the service of the duke of Ferrara. He is chiefly remembered as the author of *Il Pastor Fido*, a pastoral drama first produced in 1585. He also wrote *Rime*, 1601, Latin orations, and died at Venice on Oct. 6, 1612.

Guarneri or **GUARNERIUS**. Name of one of the three great families of Italian violin makers of Cremona who flourished during the 17th and 18th centuries. Andreas, the first of the family, was a companion of Stradivarius in the workshop of Amati, and his work dates from about 1650-95. He was succeeded by his sons, Peter and Joseph, and his grandson, Peter, son of Joseph; but the most celebrated of the family was his nephew, Joseph. He was known as *del Gesù*, because the letters I.H.S. appear after his name on the labels in his violins. His finest instruments date from about 1725-40.

Guastalla. City of Italy, in the prov. of Reggio Emilia. It stands near the river Po, and is a rly. junction 19 m. by rly. N. of Reggio. Founded by the Lombards in the 7th century, it has 16th century fortifications, a ruined castle, a 10th century cathedral (restored), and a school of music. Here in 1734 the Austrians were defeated by the Franco-Sardinian forces. Pop. 11,881.

Guatemala, Republic of Central America. It lies S. and E. of Mexico, and is bounded S.W. by the Pacific, E. by British Honduras and the Gulf of Honduras, and S. by San Salvador and Honduras. Its area is 48,290 sq. m.; the pop. 2,003,579, of whom 60 p.c. are pure Indians and the majority of the rest half-castes, only a very small proportion being of European descent. For administrative purposes the republic is divided into 22 depts. The capital was Guatemala, but on Jan. 3 and 4, 1918, an earthquake laid the whole city in ruins. Other important towns are Quetzaltenango, Coban, and Totonicapán.

Physical Features

The surface is mountainous, except near the N.E. coast, where it is low-lying and marshy forest land. Several mountain ranges, mainly belonging to the Antillean system, traverse the country. The principal ranges are the Cordilleras from S.E. to N.W., the Sierra Madre in the W. and S., the Sierra de las Minas, the Sierra de Chama, the Sierra de Santa Cruz, and the Sierra de Copán in the centre and E., the latter close to the Honduras border. The loftiest peaks in the Cordillera are Tajumulco (12,600 ft.) and Tacamá (12,400 ft.) in the S.W.; Acatenango (11,100 ft.) and the volcano Fuego in the south-central; and the volcanoes Pacaya

and Santa Maria on the S. slope. In Oct., 1902, the latter erupted, causing widespread havoc. Earthquakes are of frequent occurrence. One in April, 1902, shattered the town of Quetzaltenango, other severe visitations being those of 1863 and 1874. The coast-line is unbroken on the Pacific side, and the only indentation on the Atlantic side is the Bay of Amatique, an extension of the Gulf of Honduras. There are no promontories of importance.

The Usumacinta, which forms part of the Mexican boundary, the Motagua, and Polochic are the largest of the numerous but comparatively unimportant rivers. Steamships ply on the Polochic and Dulce, and a few other rivers can be navigated by light craft, but the remainder are unnavigable. The principal lakes are the Izabal, Atitlán (noted for its crabs), Amatitlán, Ayarza, Petén, and Guija. The chief ports are San José, Ocos, and Champerico on the Pacific coast, and Santa Tomas, Livingston, and Puerto Barrios on the Caribbean Sea.

The narrow Pacific slope is well watered, and productive up to an elevation of 5,000 ft., and is the most densely populated part of the country. The Atlantic slope is thinly populated, and of no great commercial importance, although coffee is raised in the Coban district. Bananas are cultivated in the Motagua valley and around Lake Izabal, and lumbering is carried on in the Petén region.

The climate varies according to the elevation. Torrid heat prevails on the Pacific lowlands, where yellow fever is a scourge. From 2,000 ft. to 5,000 ft. the climate is agreeable and like perpetual spring. Above 5,000 ft. it is cold. The rainy season is from May to October, extended by two months on the coast.

The most important crops are coffee, plantains, bananas, corn, rice, and potatoes. The cotton-growing industry is being developed. On the plateaux horses, mules, cattle, sheep, goats, and pigs are reared in large numbers. The mineral wealth of the country is immense, but the mining industry is as yet undeveloped. The most important mining zones are in the depts. of Chiquimula and Huehuetenango. Gold, silver, coal, lignite, manganese, copper, tin, lead, cinnamon, slate, alum, antimony, marble, alabaster, plumbago, asbestos,

bitumen, porphyry, zinc, and chalk are all found, while opals and other precious stones exist. The Petén forests abound in valuable trees, producing mahogany, dyewoods, oak, pine, and spruce wood. Mangrove, bamboo, agave, coconut and palm trees are also present, while there is a wealthy variety of orchids and other flowers and ferns.

Among the animals met with in Guatemala are the jaguar, cougar, tapir, honey-bear, wild pig, quetzal, ocelot, puma, armadillo, red deer, and monkeys. Reptiles include the alligator, iguana, turtles, boas and various other kinds of snakes; bird life is prolific and varied; the insects include mosquitoes, locusts, tarantulas, grasshoppers, and myriads of tormenting flies.

Railways and Communications

The railways and communications of Guatemala are as yet inadequate. In 1912 the Guatemala Rly. (195 m.), the Guatemala Central Rly. (139 m.), the Occidental Rly. (51 m.), and the Ocos Rly. (22 m.) were incorporated as the International Rly. of Central America. In 1914 a 60-m. railroad between Santa Maria and Las Cruces was purchased, and traffic was opened in Oct., 1916. Other lines are projected, but away from the rlys. most of the traffic is borne by mules, although there are few good roads in the country. An intra-coastal canal, called the Chiquimulilla canal, is being constructed from San José to the Esclaves river, close to the Pacific seaboard. There are 4,337 m. of telegraph lines in operation. The prevailing religion is Roman Catholicism, but all other creeds are tolerated. Education is compulsory and free.

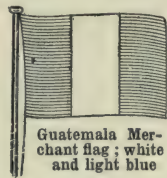
The republic, which dates from March 21, 1847, is governed by a president, elected for a term of six years; a national assembly elected by popular vote at the rate of one member for every 20,000 inhabitants; and a council of state consisting of 13 members, partly appointed by the president and partly by the national assembly.

The money is the paper peso with a nominal value of 4s., the nickel real, half real, and quarter real, worth 6d., 3d., and 1½d. respectively, and copper coins of 25 and 12½ centavos.

HISTORY. Guatemala was invaded and subdued by Pedro de Alvarado, an officer in the train of Cortes, between 1522-1524, and for nearly 300 years was ruled from Spain. The territory then included all the countries in the region now called Central America, and it was not until 1821 that she threw off the Spanish yoke,



Guatemala arms



Guatemala Merchant flag; white and light blue



proclaimed her independence, and joined the Confederation of Central America, which lasted for 26 years. From 1847, when the republic was founded, down to 1865, the country was virtually in the hands of a dictator named Rafael Carrera, an Indian of obscure origin, whose dictatorship terminated with his death. In 1871 General Barrios was elected president, and under his rule the republic prospered. War, however, broke out with Salvador, Nicaragua, and Costa Rica in 1885, over an attempt to re-establish the Central American Confederation, and Barrios was killed. A period of anarchy followed, with civil war in 1906, but the internecine strife was finally quelled by the intervention of Presidents Roosevelt and Diaz. The president, Carlos Herrera, was elected in March, 1920.

Guatemala. City of Guatemala, Central America, and capital of the republic. A well-built town, with broad, straight streets and containing a cathedral, a university, and many fine public buildings, it was entirely destroyed by earthquake Jan. 3 and 4, 1918. It stood on an undulating plain, 80 m. by rly. from San José, its port on the Pacific, and was also connected by rly. with a port on the Gulf of Honduras. The third capital of this name, it replaced Almalonga or La Ciudad Vieja and Guatemala la Antigua (25 m. to the W.), both destroyed by earthquakes. In 1920 the new city was being rebuilt about 12 m. S. of the recently destroyed one. See Earthquake.

Guava (*Psidium guava*). Small tree of the natural order Myrtaceae, a native of the W. Indies. The branches are four-sided, the leaves opposite, oval, and downy beneath, and the flowers white, singly or in clusters of three. The fruit is apple- or pear-shaped, with thin, yellow rind filled with pulpy yellow or red flesh, of acid-sweet flavour, in

which are numerous hard, kidney-shaped seeds. It is made into guava jelly and guava cheese. The purple guava is *P. cattleianum*, a native of Brazil.

Guaviare, GUAYABERO OR LESSEPS. River of Colombia, a tributary of the Orinoco. It rises

is divided into two sections, an old town, narrow, dirty, and badly paved, and a new one well laid out. The seat of a bishop, the city possesses numerous churches and educational establishments. There are also large shipyards and a good harbour, protected by a breakwater. The city is low-lying, the sanitation bad, and the water supply poor.

In 1913 a scheme to apply an effective system of sanitation was begun at a cost of £2,000,000. Manufactures include soap, candles,

liquors, mineral waters, alcohol, hats, and food products, and there is trade in tobacco, hides, cotton, rubber, bark, cacao, quinine, and metals. The Guayaquil-Quito rly. terminus is on the opposite side of the estuary, but another line to the coast is now constructed. The port is visited by European steamers via the Panama Canal. A conflagration in 1896 destroyed much of the city. Pop. 93,851.



Guatemala City, Central America. Cathedral before its destruction, and, top, left, view of the Ermita valley

in the Cordillera near Bogotá, and flows generally in an easterly direction for 700 m. It is navigable for small craft for most of its course.

Guayaquil OR SANTIAGO DE GUAYAQUIL. Seaport and city of Ecuador, capital of the prov. of Guayas. It stands on the W. bank of the estuary of the Guayas, at the head of the Gulf of Guayaquil. It is the port for Quito, from which it is distant about 150 m. S.S.W. The city



Guayaquil. General view of this city and seaport of Ecuador, South America

Guayaquil, GULF OF. Large inlet of the Pacific Ocean, on the W. coast of S. America, between Ecuador and Peru. It is 100 m. wide at its mouth, and contains the island of Puná, 32 m. long and 12 m. broad.

Guaycuru. Family of primitive S. American Indian tribes, mainly in the Gran Chaco, N. Argentina. Their speech is more guttural and primitive than the Guarani, from which they get their name. The Chaco tribes are predatory nomad horsemen, who used bows and arrows, and knives made of fish-jaws. They practised infanticide, but not cannibalism. Westward, the Matacos were widespread. See Abipones; Charruas; Tobas.



Guava. Foliage, flower, and fruit of the West Indian tree

Guaymas. Seaport of Mexico, in the state of Sonora. Situated in the Gulf of California, it has a fine natural harbour, affording secure anchorage, and is connected by a line to Nogales with the rly. system of the U.S.A. It trades in the produce of the locality, its chief exports being gold, silver, and pearls. Pop. 8,650.

Gubbings or **GUBBINS** (Dialect-word, fish-parings). Contemptuous name formerly given to an uncivilized community in the vicinity of Brent Tor, Devonshire. They were reputed in Fuller's *Worthies* of England, 1662, to have descended from several social outcasts two centuries earlier, and to have multiplied without marriage. They occupied mean hovels or caves, subsisted on pilfered sheep, and spoke a debased local dialect. They developed great fleetness of foot, revenged all wrongs, resisted the civil power, and were governed by an elected king of the Gubbings. The tradition was graphically utilised in Kingsley's *Westward Ho!* The colloquialism "greedy Gubbins" as a variant for greedyguts still lingers. See Doones, *The*.

Gubbio. City of Italy. In the prov. of Perugia, it is the ancient Iguvium and the medieval Eugubium. It lies at the base and on the slopes of Monte Calvo, at an alt. of 1,600 ft., 26 m. S. of Urbino. The city is typically medieval, with many old palaces and churches. The cathedral dates from the 13th century, and the Gothic palace of the dukes of Urbino was rebuilt in Renaissance style. The municipal palace contains the Eugubine Tables (*q.v.*).

The Palazzo dei Consoli (1332-46), a huge pinnacled building with a tower, is now a national monument. Above this palace stands the convent of Sant' Ubaldo. The Festa dei Ceri (Feast of Candles) is an interesting procession through

the city to the convent, which takes place annually on May 15. Gubbio has long been famous for its majolica ware. Pop. 27,397. See Gubbio, L. McCracken, 1905.

Guben. Town of Prussia. A railway junction, it stands on the Neisse, 22 m. from Frankfort-on-Oder. It has some textile and other industries, including the making of hats and cloth, also pottery, paper, etc., and its chief buildings are churches, a museum, etc. It is an old town and suffered much in various wars. After being, in turn, under the rule of Bohemia and Saxony, it passed to Prussia by the treaty of 1815. Pop. 38,590.

Gubernatis, COUNT ANGELO DE (1840-1913). Italian scholar and critic. Born at Turin, April 7, 1840, he became professor of Sanskrit at Florence in 1863, but resigned the position on marrying a relative of Bakunin (*q.v.*), with whose revolutionary theories he was, for a time, impressed. He was, however, re-elected to the professorship in 1867. In 1876 he was Italian delegate at the International Congress of Orientalists, and two years later lectured on Manzoni at Oxford. He founded the Indian Museum at Florence, and in 1891 became professor of Sanskrit at Rome. He died on Feb. 26, 1913. His chief works include *Zoological Mythology*, 1872; *Mitologia Vedica*, 1874; *La Mythologie des Plantes*, 1878-82; *Manzoni*, 1878; *Peregrinazioni Indiani*, 1886-87; *La Serbie et les Serbes*, 1897; and *La Roumanie et les Roumains*, 1898.

Gude, HANS FREDRIK (1825-1903). Norwegian painter. Born in Christiania, March 13, 1825, he studied under Schirmer and Achenbach, the latter of whom persuaded him to practise landscapes instead of history. In 1854 he became professor in the Academy of Düsseldorf, in 1864 in that of Karlsruhe, and in 1886 in that of Berlin, where he died Aug. 17, 1903. His earlier pictures of the scenery of the mountains and fiords gave him a foremost place in the Norwegian school. Among his best works may be named *Wedding at Hardanger*, *Shipwrecked Fishermen*, *Fishing by Night*, *The Vikings' Ships in Sognefiord*, *The Coast of Rügen*, *Funeral at Sognefiord*.

Gudea. Sumerian ruler of Lagash. He reigned about 2450 B.C. He imported from distant lands cedar beams, diorite, copper, and gold, for adorning his buildings. De Sarzec found beneath his temple of the moon-god Ningirsu many headless diorite statues, one having on the knees a drawing-board with

a building plan. A head subsequently found and refitted to its torso revealed his portrait; this is now in Paris. See *Babylonia*.

Guden. Largest river of Denmark, in Jutland. It traverses the prov. of Viborg, and, flowing N.E. falls into the Randers Fiord, an opening of the Kattegat, 15 m. N.E. of Randers. Its length is 80 m.

Gudgeon (*Gobio*). Genus of small fresh-water fishes, of which one species is common in most



Gudgeon, a small fresh-water fish

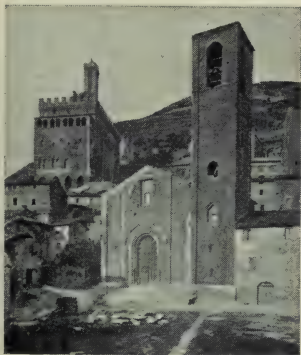
British rivers. It is related to the carp, and has two small barbels on the snout. It is usually found on the gravelly bed of the stream, is easily caught, and is fairly good eating.

Gudgeon Pin. Pin connecting the piston-rod with the connecting-rod at its small end, allowing the latter freedom of movement. The term is often applied to any such connecting pin. See *Engine*; *Steam Engine*.

Gudrun or **KUDRUN.** German romantic epic. In its existing form (13th century) it is of later date than the *Nibelungenlied*, to which in metrical form it is somewhat similar. It deals with the romance of the heroine whose name it bears, daughter of a Friesland king, and of her parents, and embodies many legends of the North Sea and coasts of Normandy.

Guebwiller or **GEBWEILER.** Town of France, in Alsace-Lorraine. It is situated 14 m. S.S.W. of Colmar at the entrance of the valley of the Lauch, a stream running down from the Vosges Mts. The church of S. Leodegar, begun in 1182, and restored in modern times, deserves mention. The industries include the manufacture of sugar, textiles, machinery, etc., and near by is produced one of the best brands of Alsatian wines. Pop. 12,900.

During the French advance into Alsace at the opening of the Great War, Guebwiller, with Mulhouse and other places, was occupied by the French, Aug. 20, 1914, for the first time since 1871, but was soon re-abandoned to the Germans. It was restored to France in 1919, under the terms of the peace treaty. See *Alsace*, *Campaigns in*.



Gubbio, Italy. Church of S. Giovanni Battista. On the left, part of the Palazzo dei Consoli

Guelder Rose (*Viburnum opulus*). Small tree of the natural order Caprifoliaceae. A native of Europe, N. and W. Asia, and N. America, the smooth leaves are cut into three strongly toothed lobes. The whitish flowers form a cluster of which the central mass are small ($\frac{1}{4}$ in.) and perfect, of a creamy tint, while those of the outer ring



Guelder Rose. Cluster of flowers of the wild plant

are three times the size, quite white, and without pistilostamens. The garden guelder rose, or snowball tree, is a variety in which all the flowers are sterile like this outer row. The wild plant is more beautiful, for in autumn the fertile flowers have been succeeded by large juicy berries of a wonderful translucent red. The flowers secrete nectar, and on the leaf-stalk there are cup-shaped glands filled with nectar for ants, which keep the plant free from caterpillars.

Guelph or **GUELF**. Italian form of the German word *Welf*, and as such that of one of the parties in the noted medieval struggle between Guelphs and Ghibellines. Meaning wolf, it began as the Christian name of a race of nobles who were powerful in Bavaria in the 11th and 12th centuries. One of them, Henry the Proud, became duke of Bavaria, and also duke of Saxony, and his son Henry the Lion was one of the most powerful of the German princes. The word became the battle cry of their followers, and was taken to Italy, where it became Guelph.

Guelph was also used as the name of the family to which the electors of Hanover and, therefore, the sovereigns of Great Britain from 1714 to 1837 belonged, these being descended from the early Welfs. It became more prominent during the years that followed the loss of his throne by George V of Hanover in 1866. His cause was spoken of as that of the Guelphs; the sum of money set aside for him

was known as the Guelph Fund; and there was a Guelph press. See Hanover.

Guelph. City of Ontario, Canada, capital of Wellington co. It stands on the Speed river, about 50 m. W by S. of Toronto. It is served by the G.T.R., C.P.R., and C.N.R., and has its own street rly. There are many factories, making iron goods, furniture, carpets, textiles, beer, soap, etc., the motive power being derived from the falls of the Speed; and it is a market for the agricultural produce of the surrounding district. In 1919 a factory for spinning linen from Canadian flax was opened. It has a city hall and market, and the Ontario Agricultural College, with its experimental farm. Pop. 16,300.

Guelph and Ghibelline. Name of two political factions, prominent in Italian history from the 12th to the 14th century. Primarily they denoted the division into imperialist and anti-imperialist parties, the supporters, that is, of the supremacy of the emperor, as head of the Holy Roman Empire, in Italy, and his opponents, at the head of whom was the pope.

The papacy disputed the headship of Christendom with the emperor, and there was consequently a natural alliance between the papacy and the Guelphs, while the Ghibellines supported the emperor. Theoretically, the Guelphs were the champions of local and popular liberties and freedom from foreign domination; but in the eyes of the Ghibellines they were the champions of a decentralization which meant anarchy, and also of ecclesiastical ascendancy. The Ghibellines stood for a strong central authority.

In the middle of the 13th century the house of Hohenstaufen was finally overthrown; imperialism and papalism ceased to provide the fundamental distinction. But party factions still clung to the old labels, and they became even more prominent as designating local parties than they had been as expressing great political principles, for which, however, they still stood in the minds of idealists such as Dante. The feud, which was especially strong in Florence, was carried into almost every relation of life, and each had its distinct habits and customs in dress, manners, and the like. In the course of the 14th century the old names as well as the old principles were gradually displaced, and virtually disappeared in the 15th century. See Ghibelline; Hohenstaufen; consult also The Renaissance in Italy, J. A. Symonds, 1875. ☛

Guelphic Order, ROYAL. Hanoverian order of knighthood, instituted by George IV of England, when Prince Regent, in 1815; it was last bestowed by William IV. The badge is a star with the white horse of Saxony in the centre. The ribbon is of light blue watered silk.

Guémappe. Village of France. In the dept. of Pas-de-Calais, it is 5 m. E.S.E. of Arras. Lying in the valley of the Cojeul, it was prominent in the fighting along the line of this river during the Great War. It was captured by the British on April 23, 1917, retaken by the Germans, and finally captured by Canadian troops, Aug. 26, 1918. See Arras, Battles of.

Guénon (Fr., monkey). Large group of African monkeys of the genus *Cercopithecus*. They are slender with long tails and small callosities on the buttocks. Their hair has a mottled appearance, due to each hair bearing coloured rings. They are usually found in small droves in the forests, and are very pugnacious. In captivity they make good pets, as they are docile and hardy, and are easily taught to perform tricks. See Monkey.

Guépratte, ÉMILE PAUL AIMABLE. French sailor. During the Great War, in 1914-15, he took part in the naval operations in the Dardanelles. He succeeded Admiral du Fournet as commander of the French squadron in that theatre of war, and served under Vice-admiral de Robeck, who specially commended the behaviour of the French squadron under Guépratte in the attack of March 18, 1915. He was promoted vice-admiral in Oct., 1915.

Guérara, GOURARA OR GERRARA. District in the Algerian Sahara, forming the most northerly chain of oases S. of Algeria proper. It consists of the oases of Tin Erkouk, Timimoun, Tabelkoza, Sebkhia, Fatis, Tahantas, and Charouin. In 1901 it contained 689,729 date palms, consisting of more than 40 species. It was occupied by France in 1902.

Guercino. Nickname of the Italian painter Barbieri (q.v.).

Guéret. Town of France. In the dept. of Creuse, of which it is the capital, it is 48 m. from Limoges, standing at the foot of the Puy de Gaudy. The chief building is the prefecture, a house of the 15th century, and there is a museum, but there are no remains of the abbey of S. Pardoux round which the town grew. There are a number of industries, and the town is a market for the cattle and other produce of the surrounding district. It was formerly the capital of La Marche. Pop. 8,300.

Guereza (*Colobus*). Group of African monkeys, notable for the fact that the thumb is either absent or rudimentary. They include about 12 species, but are little known, as they live in the tops of the forest trees and seldom survive captivity. Most of them are black and white, and have long silky hair valued in the fur trade. See *Colobus*; *Monkey*.

Guericke, Otto von (1602-86). German scientist. Born at Magdeburg, he studied at several German universities, also at Leiden. He held a public position at Erfurt, and was for many years burgo-master of Magdeburg. He left Magdeburg in 1681, and died at Hamburg, May 11, 1686. Guericke is best known as the inventor of the air pump. He also invented the manometer, and discovered that two bodies, equally charged with electricity, will repel one another.

Guérin, Eugénie de (1805-48). French writer. She was born at Albi, Tarn, sister of the poet Maurice de Guérin (1810-39), to whom she was devotedly attached. Her *Journal et Lettres*, published in 1862, Eng. trans. 1865, reveals her as a woman of notable character, a mystic and a strong Catholic. See *Maurice and Eugénie de Guérin*, H. Parr, 1870.

Guernsey. One of the Channel Islands. Second only in size to Jersey, it is about 9 m. long and



Guernsey arms

5 m. broad, and has an area of 24½ sq. m. St. Peter Port, the capital, on the S.E. coast, and St. Sampson's are the only places of any size, the others being small fishing and inland villages. Fort George is a military station. From St. Peter Port regular communication is maintained with Southampton, Weymouth, Plymouth, London, and various ports in France.

Much of the land is divided into small holdings, and some cereals are grown. The Guernsey breed of cattle is famous. Granite is quarried and fishing is an industry. But the chief industry is market gardening, large quantities of potatoes, grapes, flowers, tomatoes, etc., grown chiefly under glass, being produced, mainly for the English market.

A picturesque island, especially in the S., where the rugged coast is broken by numerous bays, Guernsey is a favourite holiday resort. There are numerous prehistoric remains, and notable buildings of later date include Castle Cornet, a



Guernsey. St. Peter Port, capital of the second in size of the Channel Islands

fortress begun in the 13th century, and old churches at St. Sampson's, St. Martin, Vale, and Câtel. Domestic architecture includes some picturesque manor houses.

The bailiwick of Guernsey includes Alderney, Sark, Herm, and other smaller islands. Guernsey is governed by an assembly called the States and another known as the royal court. The chief officials are the lieutenant-governor and the bailiff, an attorney-general, solicitor-general, and a receiver-general, all appointed by the crown. The island, which is divided into 10 parishes, is in the diocese of Winchester, and the dean is the chief ecclesiastic. At St. Peter Port is Elizabeth College, a public school. English money is the only legal currency.

Guernsey sent two companies of volunteers to the R. Irish Regt. and R. Irish Fus. A battalion of Guernseymen, the 1st Batt. R. Guernsey Light Infantry (29th Div.), did gallant service on April 12, 1918, N. of Merville. Pop. (with Herm and Jethou), 41,900.

Guernsey Lily (*Nerine sarniensis*). Bulbous herb of the natural order Amaryllidaceae, a native of S. Africa. The strap-shaped leaves appear later than the flowers, which are lily-like, salmon-coloured, and form a large cluster at the top of a stout flower-stem.

Guerrazzi, Francesco Domenico (1804-73). Italian author and politician. Born at Leghorn, Aug. 12, 1804, he studied law at Pisa, but early turned to literature and politics. His first historical novel, *The Battle of Benevento*, 1827, established his reputation. A political agitator, he was often imprisoned, and while in prison wrote his principal work, *The Siege of Florence*, 1836. He also wrote the novels *Isabella Orsini*, 1844, and *Beatrice Cenci*, 1854. He sat in the Turin parliament, 1862-65, and died Sept. 23, 1873. See his *Letters*,

ed. G. Carducci, 1880-82, by F. Martini, 1891. *Pron.* Gwerriàti.

Guerrero. S.W. state of Mexico, bordering the Pacific. Situated on the declivity of the Anahuac plateau, it is extremely mountainous, the greater part of its surface being covered by the Sierra Madre. The valleys of the Rio de las Balsas, or Rio Mexcala, and the smaller streams produce cereals, coffee, cotton, tobacco, and other crops. The mineral wealth is extensive. The capital is Chilcingo, and the seaport Acapulco. Area, 25,279 sq. m. Pop. 620,416.

Guerrilla Warfare (Span. *guerrilla*, little war). Hostile operations of inhabitants who take up arms to defend their homes, and harass the professional army of an invader. During the French occupation of Spain, in the time of Napoleon, the guerrilla system was brought to a condition of perfection.

Guerrillas recognize no laws or customs of war; they present no target for a large disciplined force to conquer in battle; living from hand to mouth, they are independent of transport, and collect and disperse rapidly. The S. African War of 1899-1902 was prolonged by the operations of guerrillas after the Boer armies had been



Guernsey Lily. Flower-head, leaves, and bulb of the African herb

crushed. In the American Civil War, the guerrillas of W. Virginia could never be suppressed.

The Circassian leader, Schamyl, kept the Russian armies at bay for years by guerrilla tactics; the Der-vishes, Afghans, Zulus, Burmese, Kaffirs, and Maoris gave similar trouble to the British forces. The French in Algeria met their master in Abd-el-Kader. Napoleon had to execute Andreas Hofer as the sole means of clearing Tirol. The Chouans, in Brittany, defied the French Government in 1795. The Spanish army contended in vain for three years against the Cubans. The U.S.A. troops were repeatedly worsted by the tactics of the Red Indians. See *Franc-Tireur*.

Guerrini, OLINDO (1845-1916). Italian poet and critic. He was born at Forlì, and became librarian at Bologna University. At the age of twenty-two he published his first volume of poems, *Postuma: Canzoniere di Lorenzo Stecchetti*, 1877, which created something of a sensation owing to its "audacious immorality." In the succeeding two years he defended himself against his critics in *Polemica* and *Nova Polemica*. He wrote also appreciations of various Italian authors, and issued his collected poems, *La Rime*, in 1903. He died at Bologna, Oct. 22, 1916.

Guesclin, BERTRAND DU (1320-80). French soldier. Born in Brittany, he was trained to arms, and when quite young made a reputation by his skill in the tournament. He fought in the civil war then raging in Brittany, and it was there that he became one of the most renowned of the opponents of England. He was constantly in the field, and his exploits were many and glorious, although more than once he was taken prisoner. When peace was made in 1360, he marched into Spain at the head of an army of mercenaries, and there was again taken prisoner by the English at Navarrete. On the renewal of the war between England and France he was one of the French leaders, and was instrumental in recovering several districts for his king. He died July 13, 1380. Made constable of France, he was regarded as the greatest French soldier of his age.

Guest, LADY CHARLOTTE ELIZABETH (1812-95). Welsh scholar. Born at Uffington House, Lincoln-

shire, May 12, 1812, daughter of the 9th earl of Lindsey, she married, 1833, Sir Josiah Guest, Bart.



Lady Charlotte Guest, Welsh scholar

1838-49 she issued a three-volume version of the medieval Welsh tales, commonly known as *The Mabinogion* (q.v.). Regarded as a masterpiece of English prose, this marked an epoch in the study of Celtic literature, and was quickly translated into German and French by Schulz and Villemarqué respectively. In addition to a version for boys of the earliest Welsh tales of King Arthur, she wrote several volumes on china, fans, and playing cards, of which she was a well-known collector. She presented parts of her collection to the British and South Kensington Museums, and did much to revive the Eisteddfod. She died at Canford Manor, Dorset, Jan. 15, 1895.

Guest, FREDERICK EDWARD (b. 1875). British politician. Born June 14, 1875, the third son of the 1st Lord Wimborne, he was educated at Eton. Having entered the army, 1st Life Guards, he served in the expedition up the Nile in 1899, and afterwards in S. Africa. During the Great War he was first on the Western front, and then in E. Africa, winning the D.S.O. He had made three unsuccessful attempts to enter the House of Commons when he was returned as M.P. for East Dorset in 1911. In 1912 he was made treasurer of the household, being also a government whip. He left office in 1915, but in 1917 he returned, to become patronage secretary to the treasury. He was secretary for air, 1921-22.

Guest, SIR JOSIAH JOHN (1785-1852). British ironmaster. Born Feb. 2, 1785, he was the son of Thomas Guest, an ironmaster in Dowlais, Glamorganshire. Educated at grammar schools at Bridgnorth and Monmouth, he entered the ironworks at Dowlais, of which he became manager in 1815. He had already introduced consider-

able improvements in making iron, and under him the works became among the largest of their kind, employing 12,000 workers. He became their sole proprietor in 1849, and they now belong to the firm of Guest, Keen & Nettlefolds. Guest was M.P. for Honiton, 1826-31, and for Merthyr Tydvil from 1832-52. He was made a baronet in 1838, and died at Dowlais, Nov. 26, 1852. Guest, whose eldest son was made Lord Wimborne (q.v.), bought Canford Manor, in Dorset. His commercial interests in S. Wales included the chairmanship of the Taff Vale Rly.

Guetar (great-land). American Indian tribes of semi-advanced culture in central Costa Rica, at the time of the Spanish conquest. Situated between the primitive Guatuso and the Talamanca people, their territory was bounded on the Atlantic side by the San Juan and Matina rivers, and on the Pacific by the Barranca and Terraba rivers. Living in unfederated communities, they cultivated maize and cacao, practised canoe fishing, hunted deer and peccari, and wore shell necklaces and ear ornaments. Ignorant of metals, they sculptured vigorous basalt figures.

Gueudecourt. Village of France, in the dept. of Somme. It is 2½ m. S. of Bapaume, and was prominent in the battles of the Somme. It was captured from the Germans by the British on Sept. 26, 1916, retaken by the Germans in their offensive of March, 1918, and again captured by the British in Aug., 1918. See Bapaume, Battle of; Somme, Battles of the.

Gueux, LES (Fr., the beggars). Name specially applied to those Netherlands who revolted against Spain in the 16th century. The name is supposed to have originated in 1566, when a party of nobles took their petition of grievances to the regent, Margaret, duchess of Parma. To induce her to face them, someone asked if she were afraid of *ces gueux*, these beggars, and the petitioners, men of wealth and position, hailed the epithet as an honour, taking as their symbols the wallet and the bowl of the beggar.

The sequel was the revolt against Philip of Spain, and although the original league was broken up the Dutch Republic really arose from it. In the struggle the name *gueux de mer*, or sea-beggars, was given to privateers who, with the connivance of William of Orange, preyed upon the shipping of Spain. Their great exploits were the seizures of Brill and Flushing in 1572. See *Rise of the Dutch Republic*, J. L. Motley, new ed. 1901.



Bertrand du Guesclin, French soldier



Frederick E. Guest, British politician

Guevara, ANTONIO DE (c. 1490–1545). Spanish author. Passing his youth at court, in 1518 he became a Franciscan friar and was appointed preacher to the court of Charles V. Made bishop of Guadix in 1527, two years later he published *Marco Aurelio con el reloj de principes*, which appeared in London in 1532 as *The Golden Book of Aurelius, Emperor and Eloquent Orator*. This *Diall of Princes*, as a later translation in 1537 puts it, was the original of Lyly's *Euphues*, 1578, which founded the euphuist school of literature. See *Euphuism*.

Guevara, LEIS VELEZ DE (1579–1644). Spanish writer. Born at Eciija, he was educated at the university of Osuna. For a time he was a soldier and afterwards a courtier, but most of his life was devoted to writing. He died at Madrid, Nov. 10, 1644. Guevara wrote over 400 plays and a novel, *El Diabolo Cojuelo* (*The Lame Devil*), on which Le Sage based *Le Diable Boiteux*.

Guggenheim. Name of a family of American capitalists. Meyer Guggenheim, a Jew of Philadelphia, acquired copper interests in California, and in developing these was assisted by his sons. The firm which they founded was very prosperous and soon the Guggenheims were known as the copper kings. The second of the six sons, Benjamin (1855–1912), went down with the *Titanic* in 1912, while Morris or Murray (b. 1858) was perhaps the most active. All were interested in copper, while in addition Simon was U.S.A. senator for Colorado, 1907–13, being a Democrat.

Guiana. Territory in the N.E. of S. America. Bounded W. by Venezuela and E. by Brazil, it is divided into three sections—British, French, and Dutch Guiana. The general term Guiana is sometimes used to include Brazilian Guiana, territory lying to the S. Its area is est. at 166,800 sq. m. The surface slopes gently from the level coastal tract to the Tumac Humac range in the S. and to the Pacaraima range in the W. Large forested areas, inhabited by wild Indians, exist towards the S., which is still unexplored. Before 1793 this region was divided between France, Spain, Portugal, and Holland. Its coasts were first explored by Spaniards in 1499–1500. See *Arawak*.

Guiana, BRITISH. Colony of S. America. It is bounded N. by the Atlantic, S. by Brazil, W. by Venezuela, and E. by Dutch Guiana. It includes the settlements of Essequibo, Berbice, and Demerara, and has an area of 99,480 sq. m.

Inland for a distance of from 10 m. to 40 m., the country consists of rich alluvial flats and mudbanks deposited by the numerous rivers. This coastal strip is the only part under cultivation, and virtually the only part inhabited. The land thereafter rises towards the interior and culminates in the ranges of Pacaraima and Acaray in the S.W. and W., Roraima, in the former, reaching an elevation of 8,735 ft.

The chief rivers are the Essequibo (600 m.), the Berbice (400 m.), and the Demerara (250 m.). Other streams include the Courantyne on the E. boundary, the Cuyuni, Barima, Waini, Mazaruni, and Pomeroon. The Courantyne, Demerara, Barima, and Berbice are navigable for about 100 m. from their mouths,



British Guiana arms



Guiana. Map of the British, Dutch, and French colonies on the S. American Atlantic seaboard

the others for short distances only, being obstructed by rapids and cataracts. The climate is hot and the rainfall heavy; fever is prevalent in the low-lying districts.

The chief products are sugar, rice, coconuts, coffee, cacao, wild rubber, maize, wheat, vanilla, and limes. Cattle, sheep, horses, pigs, goats, and donkeys are reared. The exports include sugar, rum, charcoal, balata, timber, diamonds, and rice. Gold is mined and precious stones are found. There are about 100 m. of rly. opened for traffic. In addition there are 320 m. of good roads and 40 m. of canals. The flora and fauna are abundant. From the Berbice river the huge water-lily, the *Victoria Regia*, was first obtained. The colony is administered by a governor assisted by a council. The capital is Georgetown.

Trade is almost entirely confined to the United Kingdom,

Canada, and the United States. Imports are mainly foodstuffs such as flour, meat, butter, clothing, machinery and hardware, tobacco and alcoholic beverages; of these the United States supplies approximately half. Exports are largely sugar, rum, and balata, and are almost equally divided between the United Kingdom and Canada.

The colony was originally founded by the Dutch, who settled on the Essequibo river in the 17th century. In 1781 it was captured by the British and, after changing owners several times, was finally ceded to the British in 1815. Pop. 310,972.

Bibliography. History of B.G., J. Rodway, 1891; *Twenty-five Years in B.G.*, H. Kirke, 1898; *Handbook of B.G.*, G. D. Bayley, 1909; *Guiana*, British, French, and Dutch, J. Rodway, 1912.

Guiana, DUTCH, OR SURINAM. Colony of S. America, belonging to the Netherlands. The area is 46,000

sq. m. It lies between British Guiana on the W. and French Guiana on the E., and is bounded N. by the Atlantic and S. by Brazil. The Courantyne river flows along the W. and the Maroni along the E. frontier. In the S. are impenetrable forests and savannas, culminating in the Acaray range. The configuration of the surface, the climate and

productions resemble those of British Guiana (*q.v.*). Only one-tenth of the territory is settled, and most of the plantations lie along the shores of the Surinam.

The capital, Paramaribo, stands on the Surinam, near its mouth. The colony is administered by a governor, assisted by a council. Exports include sugar, cacao, bananas, coffee, rice, maize, rum, and molasses. The language, laws, and coinage are Dutch.

The colony was founded by Lord Willoughby, then governor of Barbados, in 1650, and was exchanged 17 years later, at the peace of Breda, for what is now New York. It finally became Dutch in 1815. Pop. 107,827, exclusive of the forest aborigines.

Guiana, FRENCH. Colony of S. America, belonging to France. It lies between Dutch Guiana on the W. and Brazil on the E. and S., while the Atlantic washes its shores

on the N. Area 32,000 sq. m. The Maroni river flows along its W. boundary, and the Oyapock marks the E. frontier. Other rivers are the Ouya, Sinnimari, Mana, and Approuague. The continuation of the Acaray range or Tumac Humac mountains extends along the S. boundary. The flat alluvial tract on the coast is exceedingly fertile.

The chief products are sugar, coffee, cacao, rice, maize, manioc, and indigo. Rubber, pepper, spices, rum, rosewood essence, phosphates, woods, and skins are exported. The colony includes the so-called island of Cayenne, on which stands the capital of the same name. It is only separated from the mainland by the forking of a river. The chief ports are Cayenne, Oyapock, and St. Laurent-du-Maroni. The colony is administered by a governor assisted by a council, and is represented in the French Parliament by a deputy.

French settlers arrived at Cayenne in 1604. In 1763 the French government dispatched 12,000 emigrants to the colony, but nearly all succumbed to the ravages of disease and the climate. Captured by the British and Portuguese in 1809, it was returned to France in 1814. Since 1855 Guiana has been a penal settlement. Pop. 26,325, exclusive of the convicts, who number about 6,000. *See* Cayenne.

Guicciardini, FRANCESCO (1483-1540). Italian historian. Contemporary and friend of Machiavelli,

he was a practical man of affairs, and has been described as the realist where Machiavelli was the idealist. Despite his holding frequently opposite views, he cynically adapted himself to the service of the rulers of his time.

In 1534 he retired and devoted himself to writing his great History of Italy from 1490 to 1532, a translation of which into English by A. P. Goddard was published in ten volumes, 1755-59. This work has been summed up as being with all its defects one of the most valuable histories ever written. Guicciardini's other writings include a series of political aphorisms. *Pron.* Gwitchardenee.

Guiccioli, COUNTESS TERESA (1802-73). Italian mistress of Lord Byron (*q.v.*). Daughter of Count Gamba of Ravenna, she was married in her 17th year to the sixty-year-old Count Guiccioli.

Shortly after her marriage she was introduced to Byron, in April, 1820, and became infatuated with him.



Teresa Guiccioli,
Italian countess
After W. Brockedon

Thenceforward, thanks to an alternately complacent and jealous husband (from whom she was subsequently separated), she was more or less closely associated with the poet to the end of his life. She later married the Marquis Rouillé de Boissy. In 1868 she published Byron jugé par les témoins de sa vie (Eng. trans. 1869).

Guide-book. Handbook for tourists and travellers. Early travel-books were chiefly didactic. One of the first was written in 1574 by a German, Hieronymus Turler. Paterson's British Itinerary appeared in 1776. There are numerous guides to London dated early in the 19th century.

Guides, CORPS OF. Unit of the Indian army. It owes its existence to Sir Henry Lawrence, who, in 1846, decided to raise for service on the frontiers a body of troops more mobile than the regulars. The name had been borne by a unit in Napoleon's army. Sir Henry Lumsden was its first commander. A small force, but including both horse and foot soldiers, it saw active service almost at once and was constantly engaged in border warfare thereafter. Among the many incidents in the history of the Guides are the march to Delhi during the Mutiny, the massacre at Kabul in 1879, when a detachment of them formed Cavagnari's escort, their share in the Afghan War of 1878-80, and services at the relief of Chitral. The corps grew from a troop of cavalry and two companies of infantry to a strength of 27 officers and 1,400 men. It has worn a khaki uniform from the first. The headquarters are at



Corps of Guides.
Private of infantry
company

Mardan and its full name is the Queen's Own Corps of Guides. *See* Army; consult The Story of the Guides, G. J. Younghusband, 1908.

Guidon (Fr.). Crimson silk colours of dragoon regiments of the British army. The lance is 8 ft. 6 ins. long, including the royal crest on top. The flag is 3 ft. 5 ins. to the ends of the points of the swallow tails, exclusive of fringe, and 2 ft. 3 ins. on the lance; the width of the slit at the points of the swallow tail is 13½ ins.; it bears the badge, devices, and mottoes conferred by royal authority for services in the field. *See* Colours; Eagle: Standard.

Guido y Spano, CARLOS (b. 1832). Argentine poet and politician. He was born at Salta, in N. Argentina, and early took to a political life. In 1865 he was president of the National Congress, took part in the war against Paraguay, and was president of the senate, 1872-76. His poems were mostly comprised in Hojas al Viento, 1871.

Guienne. Prov. of old France. It was at first a part of Aquitaine, obtaining a separate existence in the 13th century. Its capital was Bordeaux. From 1154-1451 it was an English possession. From 1451 it was part of France, and with Gascony formed one of the governments of the *ancien régime*. Since the Revolution it has been divided between the departments of Gironde, Lot, Lot-et-Garonne, Dordogne, and Tarn-et-Garonne. *See* Aquitaine; France: History.

Guilbert, YVETTE (b. 1869). French singer and actress. Born in Paris, she worked as a girl in millinery and dressmaking establishments, and as a newspaper reporter. Her gifts of witty impersonation and her skill as a singer of piquant songs led her to café-concert engagements, and, in 1890, to highly successful appearances at the Eldorado and Ambassadeurs, Paris. She was enthusiastically received in London, Rome, Vienna, Berlin, and elsewhere. She toured the U.S.A., 1906-7, 1909-10, and 1915-17, becoming teacher of dramatic diction at New York. She wrote two novels, La Vedette, and Les Demi-Vieilles, 1902, and published How to Sing a Song, 1919.



Yvette Guilbert



Francesco Guicciardini,
Italian historian
From a print

GUILD : IN TRADE AND CRAFTSMANSHIP

G. H. Leonard, Prof. of Modern History, Univ. Coll., Bristol

Trade Unions is an article allied to this one. See also Apprenticeship; Industrial Revolution and the entries on the various livery companies. Guild Socialism is the subject of a separate article

The word guild, alternatively gild, the u being inserted to indicate the hard sound of g, is derived from A.S. gild, payment, but its primary meaning is an association of some kind. Even before the Norman Conquest English and other European people were accustomed to form themselves for social and religious purposes into associations, artificial families of brethren and sistren which were called guilds or gilds, from the geld or payment out of which the feasts and masses for the souls of the departed were provided. Such guilds, developing in many interesting ways, in Germany as well as in England, existed side by side with the commercial and industrial guilds of the Middle Ages, in which the religious and social side was always strongly insisted on.

Early in the 12th century, dealers and the few men more or less permanently engaged in handicraft, who were now making their appearance in the towns, were beginning to form themselves into associations to supervise and regulate local trade. No privilege was more coveted in the town charters than the recognition of such an association of merchants. The merchant guild laid down rules for the honest conduct of trade, managed the markets, but above all secured for its members freedom from tolls, and the right of keeping much, at all events, of the buying and selling within the borough in their own hands, keeping out the foreign merchant from abroad, and the local dealer—equally a foreigner—who lived, perhaps, only just outside the town walls.

Guildship and Burgessship

Though most members of the merchant guild were commonly also members of the municipal government, guildship and burgessship were not at first identical terms. Only gradually did the two bodies become one. It is not easy to define the early relations of the local authority, whether merchant guild or municipality, to the craft guilds, which are found in almost every industry and every town at the end of the 14th century, while some of them, e.g. several of the weavers' guilds, date back at least two centuries earlier. In England, at all events, the craft guild appears to develop from the natural grouping together of men engaged in the same kind of work and living, according to medieval custom, in the

same quarter of the town. In the first instance, the purpose of this may have been largely religious, but as industry expanded and new and highly specialised trades sprang up, a need for a more detailed supervision and government in the interest of seller and buyer alike, which the older bodies realized they could hardly supply, led to the regular formation, under the municipal authority, of responsible organizations of men engaged in a particular trade. There are many references also to women as members of guilds, though in certain cases this was by no means encouraged.

Functions of Craft Guilds

It was the duty of the wardens and aldermen of the new craft guilds to keep the trade in good repute, making "reasonable ordinances" for the observance of proper standards of size and quality, providing for skilled workmanship, and in some cases settling prices, though this was apparently more often the duty of the municipal authority. Everyone believed that there was such a thing as a just price, which depended on the cost of materials, and on a reasonable wage which would enable the worker to support himself and his family according to the standard of the class to which he belonged. In the early days, when markets were small, and industry was of a comparatively simple character, such prices and wages were really easy to determine, and general regulations as to methods of work, hours of labour, etc., comparatively easy to enforce, but it was necessary to insist that all who worked at a particular trade should be members of the guild, though to no honest man would membership be denied, provided he held the proper qualifications.

The necessary guarantees of character and skill were provided in the system of apprenticeship, which, beginning in the middle of the 13th century, soon became an integral part of the social and economic life of the people. The "prentice," on signing his indentures, was taken into the household of a master craftsman, there to be taught, not only the "mystery" (*ministerium*) or trade, with its secrets, but to be bred up in religion and good manners as a Christian and a citizen. It was the duty of the master, *in loco parentis*, to provide bed, board, suitable

clothing, general oversight, paternal advice—and chastisement—Sometimes even a school education, perhaps including in certain trades the knowledge of foreign languages.

By the custom of London, which soon became general, the period of apprenticeship was one of seven years; a man was not considered to have grown into "full knowledge of his art" until the age of twenty-three. The apprentice might then, in the earlier days, produce his masterpiece, and be accepted as a master who might set up for himself in business and marry. But though little capital was needed—a man's tools and shop being all that was generally required—it was usual that a few years should be spent as a journeyman paid originally by the day.

As time went on, however, it became increasingly difficult for the journeyman to become a master, the members of the old guild abusing the trust which had been tacitly given to them on behalf of the community. Closing the doors to newcomers, or to men who could not afford to pay a large entrance fee, in order to keep up prices that were no longer reasonable, they attempted to keep the monopoly of sale at all events in their own hands. A further division of labour was now rapidly developing. Hitherto masters and men had been of the same class. Their interests were ultimately the same. But evidence soon appears of a cleavage between the wealthy members, the traders and shopkeepers who were accumulating capital in the modern sense, and ceasing to follow their trade, as of old, in the workshop itself, and the actual producers, comparatively few of whom could hope to better their position—the hired men, with a new sense of class consciousness, who began to found, within the guild, new associations of labour, yeomen guilds as they were called, antagonistic to the masters, and using from time to time the now familiar weapon of the strike.

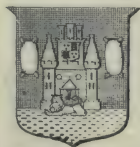
Decline of the Guilds

Four stages are recognized in the history of English industry. The second stage, that of the guild—when for the first time a class of professional men for whom manufacture was a primary vocation, had replaced the family system, in which the household itself supplied nearly all its own wants, was now in turn to be slowly superseded by the domestic system in which, before the era of machinery and the modern factory, capitalists for the most part put out their work to be done in the homes of the people, and were virtually independent of

any organization, outside their own. Trade was expanding. The old towns were decaying, and industry was shifting to new centres where the restrictions of the guild did not apply. The expenses of those still working in guilds were heavy, while the value of membership steadily decreased. With the marked development of a purely commercial spirit in the 15th century, men wanted greater freedom to acquire wealth for themselves, while with the new ideas of individualism which spread in the 16th century the general welfare of the community was forgotten. In the confiscation of the property of the religious guilds under Edward VI, the craft guilds, or companies, also suffered by the loss at least of those funds which had accumulated for purposes now officially regarded as superstitions. In the 20th century the word was used for a certain class of trade unions, guilds of bank clerks, for instance. Somewhat different were the building guilds, consisting of representatives of the various classes of workers in that industry. See Housing.

Bibliography. The Old Guilds of England, F. Armitage, 1919; Guilds in the Middle Ages, G. Reynard, Eng. trans. D. Terry, 1919; The Parish Guilds of Mediaeval England, H. F. Westlake, 1919.

Guildford. Borough and market town of Surrey, for some purposes still the county town. It is 29 m from London, having stations on the L. & S.W., L.B. & S.C., and S.E. & C. Rylys., and stands on the Wey. In the High Street are Abbot's Hospital, a Jacobean



Guildford arms

building founded in 1619 as an almshouse by Archbishop Abbot, and famous for its oak; the grammar school of the 16th century, with its library and chained books; the Angel Inn with its vaults, and other historic buildings. The town has the keep of its Norman castle, a museum, county hall, county hospital, and institute. The guildhall is a brick and timber erection of the late 17th century. The chief churches are S. Mary's, mainly of the 12th century, with some interesting architectural features; S. Nicolas, rebuilt about 1875 but containing the old Loseley Chapel with its memorials; and Trinity Church, rebuilt in the 18th century. The castle grounds are now public gardens. The town has a trade in agricultural produce, and is a railway junction. Other industries are flour milling and brewing.



Guildford was an important place before the Norman Conquest. A castle was built here, it was represented in Parliament from 1295 to 1885. In the Middle Ages it was a centre of the cloth trade, and its government was in the hands of the local guild. Market day, Tues. Pop. 24,927.

Guildford. Town of Western Australia, in Swan district. It is situated on the rly. 9 m. N.E. of Perth, and was one of the earliest settlements in the original Swan River Colony. Pop. 3,200.

Guildhall. In mediaeval architecture, a hall for the meeting of the guild merchants. Its origin was a roofed booth for collecting market tolls. As the local merchant organizations developed, a room for business purposes was added, generally built over the toll booth, and the practice of placing the council chamber of the guildhall on an upper floor, with access to the market place, was retained long after the original rough toll booth had become a structure of stone or brick.

The guild system was developed earlier in Flanders and N. Germany than elsewhere. Hence the large number of historic guildhalls in the chief cities and towns of these territories, each identified with the staple trade of the locality. In London, the halls of the separate guilds were and are known as Company Halls. On the Continent, the guild gradually extended its authority to the affairs of the town itself, and the guildhall became the town hall. Owing doubtless to the London example, the municipal buildings of York, Bristol, and other large towns are commonly called guildhalls. See Chippenharn.

Guildhall, LONDON. Home of the City Corporation. Situated at the end of King Street, Cheapside, between Aldermanbury and Basinghall Street, it was built, 1411-35, approximately on the site of an earlier structure. Most of the me-



Guildford, Surrey. Ruins of the Norman castle. Above, the High Street, looking north-east

Valentine & Frith

dieval timber work was destroyed by the Great Fire (q.v.) of 1666, but parts of porch and hall, typical of the Perpendicular period, remain, while the crypt or undercroft escaped almost unscathed. Wren replaced the open roof with a flat ceiling. The S. front was restored by George Dance, jun., in 1789, but a complete restoration was not undertaken until 1864, when Sir Horace Jones modelled the open oak roof on that destroyed in 1666, made a number of other improvements, and crowned the structure with a metal spire. The E. half of the crypt has fine shafts of Purbeck marble and stone vaulting, and when parts of the brick arches of the W. half, put up by Wren, were removed in 1909-10, it appeared that this section was identical with the E. part.

The Great Hall, 152 ft. by 49½ ft., and 89 ft. in height, is used for the election of the lord mayor and sheriffs and M.P.'s for the city, and the state banquets and entertainments of the corporation. The lord mayor's annual banquet has been held here since 1501. A 15th century window in the S.W. corner was uncovered in 1909. The walls were cleared of paint and plaster in 1914, when interesting evidence of the fire was disclosed. The hall contains a number of monuments, busts and portraits, and the giant figures of Gog and Magog (q.v.).

The chief apartments include the Common Council chamber, constructed by Sir Horace Jones in 1884; aldermen's court room, 1670-80; the new court-room, by Sydney Perks, 1908; and the rating offices, 1909. The library and reading-room, free to the public, date from 1871-72; the museum is devoted to London antiquities; and the art gallery. See The Guildhall, J. J. Baddeley, 1899.

Guildhall Art Gallery, THE. Officially known as the Art Gallery of the Corporation of London. It was founded in 1885, when a suite of spacious rooms was allotted to it in Guildhall. The collection is mainly confined to the British school, and is especially representative of 19th century work. The gallery authorities have made a speciality of loan exhibitions, such as that of Spanish art.

Guild Socialism. School of socialist thought which works for the reconstruction of society on a democratic basis through industrial self-government in the form of guilds, and through the substitution of functional for general representation in the central authority of the community. Admitting the necessity of some form of industrial society, guild socialists have chiefly been occupied with working out a fresh social theory rather than with tabulating exact ways and means of putting this into practice; and they have emphasised the industrial problem, because they hold that, until the industry of society can satisfy the primary needs of all its members, all political measures of social amelioration are dangerously delusive.

The guild is the unit on which the theory builds its structure. This is an autonomous and democratically governed organization, which includes all the workers, whether by hand or brain, actually engaged in an industry or connected groups of industries. Thus,

while land or the capital for industry would be owned by the community, the tilling of that land or the working of those mines or factories would be carried out by the guilds, who would be responsible to the whole community for the adequate fulfilment of their functions. Within the guild, directors and technical experts would conduct its work and would themselves be responsible for such direction to their fellow-members.

Guilds would naturally differ in internal details; the groups to which doctors, teachers, or artists belonged would be conducted differently from those of agricultural or mining workers. But the underlying principles of self-government in professional or technical affairs would be the same for all. The conception of the guild is wider than that of the trade union: first, as including all the workers from top to bottom, without distinction of hand or brain; second, as being an organization which not merely looks after the economic welfare of its members, but actually carries on the particular industry. The guild stands together as a whole, and though remuneration for services would naturally be graded according to their value, the wage-system as hitherto existing would have no place in its economics.

But there must be a coordination of the purposes and functions of all the individual guilds, not only where they touch directly, as iron-workers with coal-miners, but also in the intricate relations of the supply of commodities and the demands for such made by the consumers. This brings up the question of the central government of the community, whose various and often conflicting interests must be reconciled with those of the guilds. Guildsmen hold that the accepted principles of democratic self-government, such as parliamentary representation, are really impracticable, so complex are the workings of the industrial society which they seek to regulate. They urge, therefore, that the citizens should elect representatives not for general, but for specific or functional purposes. Thus, alongside of the industrial guilds, we should find bodies representative of the different functions and interests of the citizens, such as a cooperative council representing them as economic consumers, a civic council representing their common local needs, or another representing their interests in education or art.

From these councils would rise other bodies, tentatively described as the commune, combining the functions of the councils in one locality, and the regional commune, to meet the economic, administrative, and social requirements of large areas. Over these last important bodies would come a national commune, a body of delegates from the great industrial guilds of the country and from the regional bodies.

The guild doctrine was worked out first in *The New Age*, edited by A. R. Orage, from 1911 onwards, and by the National Guilds League, with headquarters at 39, Cursitor Street, London, E.C. A significant experiment was made by the formation, in 1920, of a guild in the building industry, which undertook



Guildhall, London. 1. The Gatehouse, restored in 1789, the main entrance in Guildhall Yard. 2. The Great Hall, in which the principal civic receptions and banquets are held. 3. The Library, built 1871-72

a certain number of housing contracts sanctioned by the ministry of health in Jan., 1921. See Socialism.

J. E. Miles

Bibliography. Self-Government in Industry, G. D. H. Cole, 4th ed. 1919; Guild Socialism Restated, G. D. H. Cole, 1920; A Guildsman's Interpretation of History, A. J. Pent, 1920; The Meaning of National Guilds, M. B. Reckitt and C. E. Bechofer; Roads to Freedom, Bertrand Russell, 1918.

Guilford, EARL OF. English title borne by the family of North since 1752. Francis North (1637-1685), a son of the 3rd Lord North, was made Baron Guilford in 1683. He was a prominent lawyer in the time of Charles II, ending with the position of lord keeper of the privy seal. His grandson, Francis, inherited both the barony of Guilford and that of North, and was made an earl in 1752. His son was Lord North, the prime minister of



1st Baron Guilford

After Riley

George III, who only became earl of Guilford two years before his death in 1792. Three of his sons succeeded in turn to the earldom. The third, Frederick, the 5th earl, a great lover of Greece, had much to do with the founding of the university of Corfu. The title passed on his death in 1827 to a cousin. The family seat is Waldershare Park, Dover, and the earl's eldest son is known as Lord North. See North, Lord.

Guillaumat, MARIE LOUIS ADOLPHE (b. 1863). French soldier. Born at Bourgneuf, Jan. 4,



M. L. A. Guillaumat, French soldier

1863, he joined the French army Oct. 1, 1884. He saw active service in Algeria, Tunisia, Tongking and China, and in the Boxer outbreak in 1900 commanded the French troops in Tientsin. Brigadier-general and director of infantry under the minister of war in Oct., 1913, he was appointed chief of the cabinet of the minister of war in June, 1914.

As temporary general of division he commanded the 4th infantry division in 1914 and the 1st army corps in 1915, which were heavily engaged in the Argonne and in Champagne. Full general of division, Dec., 1915, he took part

in the Verdun fighting, 1916, and was appointed head of the French second army, Dec., 1916. In Dec., 1917, Guillaumat succeeded Sarraill as commander-in-chief at Salonica, and became military governor of Paris, June, 1918, and in Oct. was placed at the head of the French fifth army. He was appointed inspector-general, June, 1919.

Guillaume d'Orange. Hero of an old French romance. Also known as Guillaume au court nez, or William of the Short Nose, his story is set forth in one of the old *chansons de geste*. The story is blended with that of S. William of Orange, count of Toulouse (d. 812).

Guillemin, AMÉDÉE VICTOR (1826-93). French scientist. Teacher of mathematics in Paris, he devoted his attention to furthering the cause of popular scientific knowledge, and in 1851 published *Les Mondes, Causeries Astronomiques*. This was followed by *Simples explications des chemins de fer* (1863), *Le Ciel* (1864), *La Lune*, (1865), and a number of books on astronomy and physics. His last considerable work was the *Petite Encyclopédie Populaire*, 12 vols., 1886-91.

Guillemont. Village of France, in the dept. of Somme. Situated 5 m. E. of Albert, it was prominent in the battle of the Somme, 1916. It was captured on Sept. 3 by the British 20th division. Retaken by the Germans in March, 1918, it was recovered in August. See Bapaume, Battle of; Somme, Battles of the.

Guillemot (Uria). Genus of seabirds belonging to the auk family and including the razorbill.

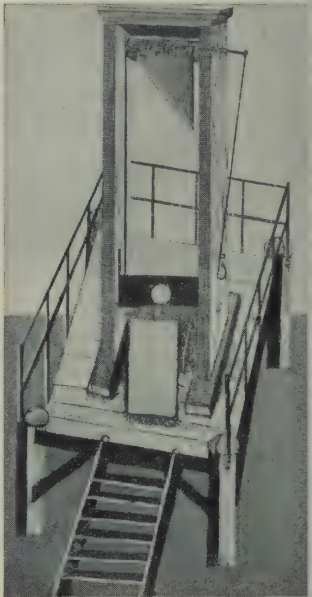


Guillemot. Specimen of *Uria troile*

No nest is made, the single large egg being laid on a bare cliff-ledge.

Guillotine. Instrument for the painless decapitation of criminals. It consists of two upright grooved posts between which a heavy knife is mounted with its blade set obliquely. When a cord is released the blade falls swiftly

on to the block on which the victim's head lies. Similar contrivances existed in Scotland.

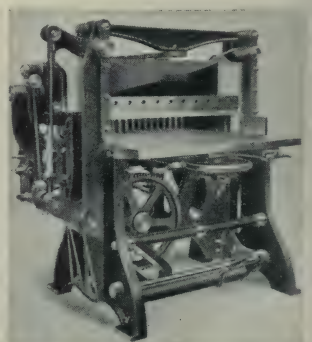


Guillotine used by the French revolutionaries in the days of the Terror

From a contemporary print

where the "Maiden" was in use by 1581, and at Halifax, Yorkshire, before 1650. The present name comes from that of a French doctor, Joseph Ignace Guillotin (1738-1814), who recommended its use to the Constituent Assembly in 1789, and saw it officially adopted by the penal code, 1792. It is still the means of capital punishment in France.

The name is applied in English printing offices, paper warehouses, and bookbinding establishments to a machine for cutting, squaring, and trimming paper.



Guillotine. Machine used by bookbinders for squaring and trimming paper

By courtesy of Payne & Sons (Olley), Ltd.

Guillotine is also used as a political term to indicate the procedure by which the discussion of a measure in parliament is cut short by fixing a day or hour at which the discussion must end. See Capital Punishment.

Guilmant, FÉLIX ALEXANDRE (1837-1911). French organist and composer. Born at Boulogne, March 12, 1837, the son of an organist, he became himself organist of a church there at the age of sixteen. His masters were his father and the Belgian Lemmens. In 1871 Guilmant was appointed organist of the church of the Trinity in Paris, a post he retained for thirty years. He composed much excellent music for the organ, was professor at the Conservatoire, and undertook concert tours through Europe.

Guimaraes. Town of Portugal, in the district of Braga. It is 36 m. by rly. N.E. of Oporto by a branch line. Its 11th century castle was the birthplace of Alfonso (1094), the first king of Portugal. The 14th century church of Santa Maria da Oliveira is built on the site of an older edifice, traditionally connected with King Wamba (672-680). It has an arcaded town hall. The sulphur springs near the town were the Roman Aquae Laevae. In the neighbourhood is Mons Citania, a prehistoric Iberian city, some ruins of which are still extant. Pop. 8,860.

Guinea. Obsolete gold coin of the English currency. It was first struck in 1663, deriving its name



Guinea of George III, known as the spade guinea from the shield. Actual diameter, 1 inch

from the fact that the gold used was imported by a chartered company trading with Guinea, W. Africa. Its nominal value was 20 shillings, but through the rapid depreciation of the silver coinage during the latter part of the 17th century, it rose to be worth as much as 30 shillings by 1694. It sank, however, and in 1717 its value was fixed at 21 shillings. Pieces of $\frac{1}{2}$, 2, and 5 guineas were also struck, and in 1718 a $\frac{1}{4}$ -guinea was coined. The last issue was that of 1813, and in 1817 its place as the standard gold coin was taken by the sovereign (*q.v.*). As a monetary unit, the guinea has survived, and certain payments, *e.g.* professional fees, are customarily reckoned in guineas.

Guinea. Name applied to a large portion of W. Africa. It covers the territory from the mouth of the Senegal to the S. portion of Angola, and came into general use in the 15th century.

Guinea, FRENCH, OR LA GUINÉE FRANÇAISE. French colony on the coast of W. Africa. It lies between Portuguese Guinea and the British colony of Sierra Leone, by which it is bounded on the N.W. and S.E. respectively. On the N. the French colonies of Senegal and Upper Senegal-Niger, on the S. Liberia, and on the E. the French colony of the Ivory Coast form the boundaries.

The colony's area is 95,218 sq. m. and the pop. is 1,851,200, including 1,200 Europeans. The colony may be divided into three geographical zones: (1) the flat coastal districts varying in width from 25 m. to 65 m.; (2) a succession of high plateaux culminating in (3) Fouta-Djallon (Futa-Jallon), a mountainous region forming the watershed of the rivers Gambia, Senegal, and Niger. The inhabitants of these regions are generally of mixed origin. The principal tribes are the Diallonkes or Sous-sous, amongst whom Mahomedanism is making rapid progress; the Timenes; and the Foulahs.

The colony is administered by a lieutenant-governor responsible to the governor-general of French W. Africa, and an administrative council, and is divided into two communal districts (Konakry, the capital, and Kankan), 18 circles, and a military region situated to the N. of Liberia. The principal products are ground-nuts, tobacco, gum, timber, kola nuts, rice, cotton, wax, and ivory, and there is a large trade in skins and hides, the country being specially rich in cattle, sheep, and goats. The chief towns are Konakry (7,385), the capital, an important port; Kouroussa (3,142) and Siguri (3,734), on the Niger; Kankan (7,126), Dubreka (1,335), Boke (3,803), on the Nunez; and Mamon (2,411). Konakry is in touch with the Niger by means of the railway to Kouroussa (366 m.) and Kankan (49 m. further), and thence by waterway to Bamako and the Senegal rly.

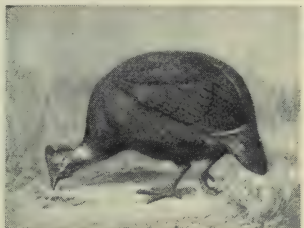
Guinea, PORTUGUESE. Colony in W. Africa, with an area of about 13,944 sq. m., completely surrounded by French territory, except where it faces the Atlantic. On the N. is Senegal, on the S. French Guinea. The country is well watered and fertile. Five rivers, the Geba, Mansoa, Cacheo, Buba, and Cachine, are of commercial importance. The population consists of Foulahs, Mandingoes, Mamjaks, and other

racés, and numbers about 300,000. The principal products are rubber, palm nuts, coffee, cotton, cocoa, rice, and ground-nuts; and hard timbers, such as mahogany, camwood, and ebony, are plentiful. Cattle are very numerous. For administrative purposes the colony is divided into five districts: Bissau, Boulama, Cacheo, Farim, and Geba. The chief commercial centres are Boulama, Bissau, Cacheo, and Cachine.

Guinea, SPANISH, OR RIO MUNI. Colony belonging to Spain, situated to the S. of Cameroons, and by the Franco-German Agreement of 1911 entirely surrounded by that territory except where it borders on the sea. The colony is administered from Santa Isabel in the island of Fernando Po (*q.v.*). In addition to the territory on the mainland (known as Rio Muni) the colony consists of the islands of Annobon, Little and Great Elobey, Corisco, and Fernando Po. The products are similar to those of the French Gabun Colony. Area of Rio Muni, 9,264 sq. m. Pop. about 100,000.

Guinea, GULF OF. Important gulf in the W. coast of Africa, stretching from Liberia to Cape Lopez in French Equatorial Africa. It is broken by several bays, including the Bight of Benin, the Bight of Biafra, Corisco Bay, and Nazareth Bay, and receives the waters of the Volta, Niger, Ogowe, and other rivers.

Guinea Fowl (*Numida meleagris*). Member of the pheasant tribe, of which it is the only repre-



Guinea Fowl. Specimen of this member of the pheasant tribe

sentative in Africa. In general appearance it is more suggestive of a small turkey than a pheasant. In its wild state the guinea fowl is well distributed over S. and Central Africa, but is absent from the northern countries. The birds live in large flocks and run with great swiftness, seldom flying unless compelled. It is fond of roosting in low trees.

The guinea fowl has been domesticated from early days and was highly appreciated by the Greeks and Romans. At the present day it is not greatly in favour with poultry breeders, as it is somewhat

delicate and very quarrelsome. But the bird is a remunerative one, both flesh and eggs being highly esteemed and fetching good prices. See Fowl; Poultry.

Guinea Grass (*Panicum maximum*). Large perennial grass of the natural order Gramineae. A native of the W. Indies, it grows from 5 ft. to 10 ft. high.

Guinea Pepper (*Xylopia aethiopica*). Tall shrub of the natural order Anonaceae. It is a native of W. Africa. It has egg-shaped leaves, covered on the underside with white down, and flowers consisting of three sepals and three petals. The long cylindrical pods have an aromatic odour and a pungent taste, and are used as substitutes for pepper.

Guinea Pig. Small domesticated rodent belonging to the cavy tribe, and nearly related to the pacas and



Guinea Pig. Specimens of the rodents often kept as pets

agutis. Its origin is doubtful, but it is believed to have descended from the black Cutler's cavy of Peru, long ago domesticated by the Incas. These cavyes were usually self-coloured, the tortoiseshell coat of the modern guinea pig and the long hair of certain varieties being the result of selective breeding. The guinea pig first appeared in Europe in the 16th century, when it was introduced to Holland soon after the discovery of America, the name Guinea being probably a corruption of Guiana. It is easily kept in captivity, provided it is protected from cold and damp: it will eat most kinds of roots and corn; is extremely prolific, and makes excellent eating.

Guinea Plum (*Parinarium excelsum*). Tree of the natural order Rosaceae, native of W. Africa. It has leathery, oblong

leaves, downy beneath, and sprays of white flowers, followed by plum-like fruits with coarse, grey skin, dry, mealy flesh, and a large stone. It is the grey plum of Sierra Leone.

Guinegate or **GUINEGATTE**.

Village of France sometimes known as Enguinegate. In the dept. of Pas-de-Calais, it is known for the battles fought here in 1479 and 1513. In the former the French were beaten by Maximilian of Austria on Aug. 7, 1479; the latter is known as the battle of the Spurs (*q.v.*).

Guines. Town of France. In the dept. of Pas-de-Calais, it is 5½ m. from Calais, with which it is connected by rail, tram, and canal. Formerly an important place, it had a castle and was a fortified town and the capital of a county to which it gave its name. It is now chiefly a market for agricultural produce. The English held it from the time of Edward III to that of Mary. It was the headquarters of Henry VIII at the Field of the Cloth of Gold (*q.v.*). Pop. 4,160.

Guines. Town of Cuba, in the prov. of Havana. It lies about 30 m. S.E. of Havana, with which it has rly. communication. Founded towards the middle of the 18th



Guingamp, France. View of the square, showing the parish church

she married King Arthur. She fell in love with Sir Lancelot, and he with her, and their relations served to bring about the last great battle and the death of Arthur. She retired to a nunnery at Amesbury and there died. See Arthur; Morte D'Arthur.

Guingamp. Town of Brittany, France. In the dept. of Côtes du Nord, it stands on the river Trieux, 82 m. W.N.W. of Rennes. A statue of the Virgin in the church of Notre Dame de Bon Secours is the object of an annual pilgrimage in July. The town is a centre of agriculture. In the Middle Ages Guingamp was the chief town of the duchy of Penthievre. Near the town is Grâces, a village with a 16th century Gothic chapel. Pop. 9,300. See Gingham.

Guinness. Name of an Irish stout brewed by the firm of Dublin brewers of this name. The soft Dublin water is particularly suitable for the brewing of stout. See Brewing; Stout.

Guinness. Name of an Irish family famous as brewers. Arthur Guinness, in the 18th century, had a brewery at Leixlip. He transferred his business to Dublin and became famed for his porter, as it was then called. By his son and grandson the business was continued, and under the latter, Benjamin Lee Guinness (1798-1868), it was much enlarged. It was known as Arthur Guinness, Sons & Co. In 1886 it was made a limited company, but the Guinness family retained a major interest in it. Benjamin Lee Guinness, made a baronet in 1867, was an M.P. and a great benefactor to Dublin. His eldest son became Baron Ardilaun, 1880, and died without sons in 1915. The other, Edward Cecil, was made baronet in 1885, Baron Iveagh in 1891, viscount in 1905, and earl in 1919. See Iveagh, Earl.

Guinness Trust. Fund established by 1st Earl Iveagh in 1889 for the provision of houses for the poorer classes in London and Dublin. The sum set aside was £250,000; blocks of dwellings were



Guinevere at the nunnery at Amesbury, where she made herself a nun and became abbess

By permission from the painting by Mary F. Raphael

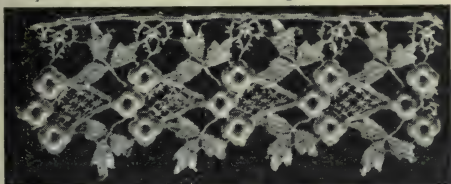
century, it was named after an extensive estate, and incorporated in 1814. In 1817 it was devastated by fire. It trades in tobacco, coffee, and sugar. Pop. 8,050.

Guinevere. Character in the Morte D'Arthur. The daughter of Leodegrance, king of Camelord,

erected, and it was afterwards increased. The offices of the trust are 5, Victoria Street, London, S.W. See Housing.

Guinobatan. Town of Luzon, Philippine Islands. It stands on the Inaya river, 10 m. N.W. of Albay. It has a trade in the hemp produced in the locality. Pop. 20,000.

Guipure. Lace-making term. The word comes from Fr. *guiper*, to whip, or cover, a thread, and originally denoted the silk-whipped cord or wire used in lace-making. It was also applied to the cartisane of parchment lace, i.e. to the small pieces of parchment or vellum whipped round with gold or silver thread. Gradually lace made with guipure came to be known itself as guipure, and the name was also used of imitation parchment lace. The term is now applied generally to lace with no mesh ground, with the patterns tied with brides or large



Guipure. Example of the lace of this name

stitches, as in modern Honiton and Maltese lace; to lace made with gimp, and to some kinds of gimp. See Lace.

Guipuzcoa. Maritime province of N. Spain. The Bay of Biscay washes its N. shores, and the river Bidassoa separates it from France on the N.E. One of the Basque provinces, it is the smallest but most densely populated in Spain, with a population of 344 per sq. m. There are pine, oak, and chestnut forests, and fruit orchards. Mineral springs abound; cod, tunny, and sardine fisheries are important, and oysters are bred. It is inhabited mainly by the Basques, who still retain their language and customs. The capital is San Sebastian. Area, 728 sq. m. Pop. 250,934.

Guiraut de Borneil (c. 1138-1220). Provençal troubadour. He was born at Excideuil, Dordogne, and accompanied Richard Cœur de Lion on the third crusade. Though known as "master of the troubadours," he has received but scant attention at the hands of students, only a portion of the eighty of his poems which survive having been edited, by A. Kolsen, 1894.

Guisborough. Market town and urban district of Yorkshire (N.R.). It is 9 m. S.E. of Middlesbrough, on the N.E. Rly., and

stands in a valley beneath the Cleveland Hills. The chief buildings are the church of S. Nicholas, a Perpendicular edifice, the town hall, and the grammar school. Here was an Augustinian priory, some few remains of which still exist. It is said to have been founded in 1109 by one of the Bruce family. The industries are mainly connected with the iron found in the Cleveland district. Market day, Tues. Pop. 7,000.

Guiscard. Village of France, in the dept. of Oise. It is 19 m. N.N.E. of Compiègne and 6 m. S. of Ham, through which passes the high road to St. Quentin. Prominent in the Great War, it was occupied by the French, March 19, 1917, and retaken by the Germans in March, 1918, the British 20th and 36th divisions being driven back during the German offensive. It

was finally retaken by the Allies in Sept., 1918. See Somme, Battles of the.

Guiscard, ROBERT (c. 1020-85). Norman warrior. Born in Normandy, he was a younger son of Tancred de Hauteville. About 1046 he went to Italy, whither his elder brothers had preceded him, they being among the Normans who had just taken Apulia from the Greeks. Three of them were chosen in turn count of Apulia, and to this office, in 1057, Robert, who had also made a name as a warrior, succeeded. He continued the Norman work of conquest and was recognized as a duke by the pope.

In 1081 he led an army to Greece, and defeated the emperor's troops at Durazzo, returning to Italy to help Pope Gregory VII, then at war with the emperor Henry IV. Guiscard drove Henry's troops from before Rome, which he entered, and to which he re-



Guisborough, Yorkshire. Ruins of the Augustinian priory, a 12th century foundation

stored Gregory. He renewed war against Byzantium, but died at Cephalonia, July, 1085. The name Guiscard means resourceful.

Guise. Town of France, in the dept. of Aisne. It stands on the Oise, 30 m. N. of Laon. The castle dates in part from the 16th century. Here are works for making stoves and similar goods, conducted on the cooperative principle; in connexion with them is a large building where the workmen live on the communistic plan. This was founded about 1850 by J. B. Godin, who followed the principles advocated by Fourier. Camille Desmoulins was born in the town. Guise is chiefly known as having given its name to a noted French family. In the Middle Ages it was the capital of a county. The town was taken by the Germans in 1914, in their first onrush towards Paris, but was recovered during the final advance of the Allies in Oct., 1918. Pop. 8,100.

Guise or St. Quentin, BATTLE OF. Fought between the French and Germans during the Great War, Aug. 29-30, 1914. On its retreat from Charleroi the 5th French army under Lanrezac, four corps strong, had reached positions S. of the Oise at Guise when it received orders from Joffre to take the offensive against St. Quentin, 15 m. W.S.W. of Guise. Joffre's object



Guise, France. Part of the town and the 16th century castle

was to give the British relief from pursuit and Manoury's new 6th army time to assemble near Paris.

On Aug. 29 Lanrezac had to open his battle, with no protection to his left except from two tired French reserve divisions, which speedily fell back.

While facing about, to move on St. Quentin, his right formed by the 10th corps was violently attacked S. and E. of Guise by the Germans in considerable strength. He determined, therefore, to abandon the movement on St. Quentin as being too dangerous, and Joffre tacitly concurred. He directed the 3rd and 1st corps to support the 10th corps against the Germans near Guise, while the 18th corps covered his left and faced towards St. Quentin.

It crossed the Oise, but near Itancourt found itself heavily engaged by troops in approximately equal force of Kluck's and Bülow's armies. The Germans were checked and driven back with considerable loss across the Oise at Guise, but the danger of being turned by Kluck's advance was such that Lanrezac could not profit by this success of his right; and on his left the 18th corps had to re-cross the Oise as German reinforcements entered the battle. Lanrezac had no choice but to break off the engagement on Aug. 30, and resume his retreat, as his right was in the air and Kluck's advance continued. The German loss was stated by Bülow at 6,000 killed and wounded. The French casualties were estimated by the Germans at a considerably higher figure, and in addition about 2,000 prisoners were taken.

Guise. French title taken from the town of this name and held by a cadet branch of the ruling family of Lorraine. Its principal holders are described below. The earldom of Guise, with Aumale, Elbeuf, and other possessions, was brought to Rudolph of Lorraine by his wife Marie of Blois, in 1333, and passed to René II of Lorraine, from whom they came to his second son Claude, in whose hands they were converted into a duchy. Mary of Guise, 1515-60, who married James V of Scotland, was mother of Mary Queen of Scots. François Joseph, 1670-75, was the 7th and last duke, and on the death of his great-aunt, Marie, the title lapsed.



Guise. Map of the battlefield of August, 1914

Guise, CHARLES DE (1525-74). French prelate, known as the cardinal of Lorraine.



Charles de Guise, Cardinal of Lorraine

The 2nd son of Claude, duke of Guise, he was made titular archbishop of Reims, 1538, and cardinal in 1547. Immoral and unscrupulous, but skilled in statecraft, he shared for many years the power of his brother François, 2nd duke of Guise. He helped to negotiate the treaty of Cateau-Cambrésis, 1559, and, a bitter foe of the Huguenots, strove to introduce the harshest form of the Inquisition into France. He was forced to leave the court by Catherine de' Medici, and died in disgrace Dec. 26, 1574. His dissolute life earned him the name of cardinal of the bottles.

Guise, CLAUDE, 1ST DUKE OF (1496-1550). French soldier. Second son of René II, duke of

Lorraine (d. 1508), he was born Oct. 20, 1496. He inherited his father's French duchy of Aumale, his brother Anthony succeeding to the dukedom of Lorraine. In 1513 he married Antoinette of Bourbon, thus linking himself with the French court, where he became an official of the household. He fought with great gallantry at Marignano, 1515, and at Fuenterrabia, 1521. In 1525 he shattered the Anabaptist forces in Lorraine. Francis I of France made Claude governor of Champagne, and converted his fief of Guise into a duchy, 1526. He was thus a peer of France, and by Angevin descent and his Lorraine duchy took precedence over the Bourbon princes themselves. He died April 12, 1550.



1st Duke of Guise
From a portrait in the Pitti Palace, Florence

Guise, FRANÇOIS, 2ND DUKE OF (1519-63). French soldier and statesman. He was born at Bar.

Feb. 17, 1519, and saw war at Montmédy, in 1542; Landrecies, in 1543; and at the siege of Boulogne, in 1545, his wounds in these campaigns giving him the sobriquet of Le Balafre, the scarred.



2nd Duke of Guise

His defence of Metz against the emperor Charles V, 1552, made him famous as a general, and he commanded the French troops sent to aid Pope Paul III against Spain, 1556. In 1558 he recovered Calais and other places from the English.

Under Francis II the duke was virtually supreme ruler of France. With relentless cruelty he suppressed the conspiracy of Amboise formed by the lesser nobility against the rule of the Guises and their ally the cardinal Granvelle, 1560. Under the regency of Catherine de' Medici he formed, with the duke de Montmorency and the marshal de S. André, the "triumvirate" who opposed her attempts to reconcile the Catholic and Protestant parties. In the religious wars which broke out in 1562, François again took the field, winning victories at Rouen and Dreux, 1562, but while laying siege to Orleans was shot at St. Mesmin by a Protestant fanatic, Feb. 19, 1563, and died five days later.

Guise, HENRI, 3RD DUKE OF (1550-88). Son of François of Guise, he inherited his father's courage but not his ability. In his youth he fought against the Turkish invaders of Hungary, and he was prominent in the massacre of S. Bartholomew, 1572. He defeated the Huguenots at Dormans, 1575, and set out, 1585, to use his great popularity to seize the crown from the discredited Henry III.

Defeating the German mercenaries at Vimory, and the Huguenots at Auneau, 1587, he entered Paris April, 1588, and the Parisian mob favouring his attempt, laid siege to the king in the Louvre. At this point his courage failed him, and Henry III left Paris for Blois, where he invited Guise to attend the states-general which he convoked there. Despite warnings of intended treachery, the duke followed the king to Blois, but was assassinated there by the king's arrangement, and almost in his presence, Dec. 25, 1588. Like his father, Henri was called Le Balafre, from a wound received at Dormans.



Guise. The assassination of Henri, 3rd Duke of Guise, by order of Henry III, in the chateau of Blois, Christmas Day, 1588

From a painting by Delaroche, Chantilly

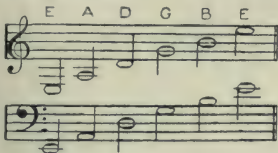
Guise, HENRI, 5TH DUKE OF (1614-64). Born at Blois, April 4, 1614, son of Charles of Lorraine, 4th duke of Guise, he became archbishop of Reims while still a young man. On his father's death, 1640, he renounced his orders and took the title.

He conspired with the count of Soissons against Louis XIII, 1641, and with Masaniello in 1647 to seize the crown of Naples. Taken prisoner in the attempt, he was confined in Spain from 1648-52. He joined the Frondeurs in Paris, 1652. He died in Paris, June, 1664.

Guitar (Gr. *kithara*, Lat. *cithara*). Stringed instrument, with a neck and fretted finger-board. The true Spanish guitar has six strings, played by plucking with the fingers, and usually tuned:—



Guitar. Andalusian model



Many other forms and sizes, tried during the last three centuries, may be seen in museums.

Guityr, LUCIEN (1860-1925). French actor. Born in Paris, he first appeared at the Gymnase

in La Dame aux Camélias, 1878. He spent some years at St. Petersburg, was producer at the Comédie Française, but became best known by his successful management of the Théâtre de la Renaissance, 1902-9. Among his most successful performances there were in Anatole France's Crainquebille and Le Mannequin d'Osier, Zola's L'Assommoir, and in L'Emigré and Le Juif Polonais. The death of Constant Coquelin, 1909, left Guityr the foremost French actor.

He appeared in London in 1902, 1909, 1920, and died June 1, 1925. His son Sacha (b. 1855), is both actor and dramatist. Among his numerous plays, witty, cynical, and sparkling, are Non o, 1905; La Clef, 1907; La Prise de Berg-op-Zoom, 1912; Pasteur, 1919. In many he has himself appeared, in some with his father. He took part in his own plays in London, May, 1920.

Guittone di Arezzo (c. 1235-94). Italian poet and writer. One of the most influential of the forerunners of Dante, he is credited with having first given the sonnet its enduring form, and with being the author of the first known Italian epistolary writings. He modelled his style on that of Seneca, as the later Humanists did on that of Cicero, and thereby somewhat hampered the national development of Italian literature. He is frequently referred to as Fra Guittone from his having joined the military and religious order of the Cavalieri de Santa Maria.

Guizot, FRANÇOIS PIERRE GUILAUME (1787-1874). French statesman, historian, and academician.

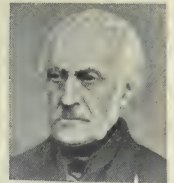
Born at Nîmes, Oct. 4, 1787, of Huguenot parentage and brought up as a Protestant at Geneva, he went to Paris in 1805 to study law.

There he soon attracted attention by his journalistic writings, and in 1812 was appointed professor of modern history in the university of France. Under Louis XVIII he held several administrative offices and became the leader of the Doctrinaires or moderate Liberals; but the reactionary policy of Charles X drove him into opposition, and for some time his lectures were interdicted. On the accession of Louis Philippe he became minister of the interior and afterwards of public instruction, and in 1840 was sent as French ambassador to London. He remained in England for a few months only, being recalled by the king to take Thiers's place as minister of foreign affairs. In 1847 he became prime minister, and his refusal to yield to various popular demands was largely instrumental in bringing about the revolution of 1848, which virtually closed his political career. The rest of his life was devoted mainly to literature. He died at Val-Richer, Normandy, Oct. 12, 1874.

Guizot's historical works—of which the most important are Histoire de la Révolution d'Angleterre, Histoire de la Civilisation en Europe, and Histoire de la Civilisation en France—are carefully written, philosophical in character, and impregnated with his own political ideas. See his Mémoires and Life by Bardoux, 1894. Pron. Ghee-zo.

Gujarat. Dist. and subdivision of the Punjab, India, in the Rawalpindi Division. It lies between the Jhelum and Chenab rivers, and is irrigated from the Jhelum canals. Of the total area about two-thirds is under cultivation, about one-third of this being devoted to wheat. District area, 2,051 sq. m. Pop. 745,634, five-sixths Mahomedans. Subdivision area, 569 sq. m. Pop. 304,778, five-sixths Mahomedans.

Gujarat. Town of the Punjab, India. The headquarters of Gujarat dist. and subdivision, it is



Guizot



Lucien Guityr, French actor
Gerschel

of considerable commercial importance, and is noted for its manufacture of furniture. Pop. 19,090, three-quarters Mahomedans, one-quarter Hindus.

Gujarat, BATTLE OF. Fought between the British and the Sikhs, Feb. 21, 1849. The second Sikh War had begun with the British check at Chillianwalla, in Jan. In Feb. Lord Gough, the British commander, fought an army of Sikhs, estimated at 60,000, drawn up before the fortified town of Gujarat. He attacked them with his artillery, in which he was greatly superior, allowing this to play upon them for 2½ hrs. An advance was then made, and the Sikh ranks broke into flight. The British cavalry pursued them for many miles, and the result was the annihilation of the Sikh army and the capture of its guns and baggage. The British army of 24,000 lost about 800. Gujarat was taken and the Punjab surrendered. See Sikh Wars.

Gujranwala. Dist., subdivision and town of the Punjab, India, in the Lahore Division. The area of the dist. is 4,082 sq. m., of which about two-thirds is under cultivation, one-third of this being devoted to wheat; other crops are gram, barley, cotton, and millet. The district owes much of its prosperity to the two Chenab irrigation canals. The manufacture of cotton cloth is an industry of some importance. Gujranwala town is an important commercial centre. Its manufactures include cotton cloth and brass vessels. Jats are the most numerous tribesmen. Pop., district, 923,419; subdivision, 218,352; town, 29,472.

Gulbarga. Division, dist., subdivision, and town of India, in Hyderabad State. Area of div. 22,110 sq. m., and of dist. 6,719 sq. m. The cultivated area of the dist. is considerable, millet being the chief crop. Limestone occurs; cotton goods are made, and millet, hides, and cotton exported. Imports include salt, cotton, woollens, and hardware. In Gulbarga City, the headquarters of the division and a trade centre, is the Jama Masjid in the old fort, a mosque constructed in the time of Ferozeshah. Pop., division, 3,673,171; district, 1,150,983; subdivision, 212,034; town, 32,437.

Gulbrandsdal or **GUDBRANDSDAL.** Valley dist. of S. Norway. It is the central part of the main valley, with ramifications of the river Lough. Emerging from Lake Mjösen, this river flows N.W. to Romsdal co., the Gulbrandsdal running from the Romsdal past Littlehammer to the base of the Dovrefeld Mts.

Gulden. Silver coin current at various times in Germany and the Netherlands. In Austria and the



Gulden. Obverse and reverse of Dutch coin of 1773. Diameter, 1 in.

S. German states it was in use until 1876, and is current as the guilder or gulden, in Holland. See Florin.



Gulf Stream. Chart of the North Atlantic Ocean showing the origin and directions of the current

Gules. One of the seven heraldic tinctures, red. It is represented in drawings by a series of thin vertical lines close together. The word is derived either from Fr. *gueules*, pl. of *gueule* (Lat. *gula*), throat, red skin, or from Persian *gyul*, rose. See Heraldry.

Gulf (Gr. *kolpos*, bay). Large indentation of the coast-line of a country or continent, and the sea contained within it. The name of bay is generally given to an indentation whose mouth is broad compared with its depth, while gulf is more appropriate to a long narrow indentation. Examples are the gulfs of Suez, Aden, California, Mexico, Finland, and Bothnia.

Gulf Stream. Warm ocean current flowing from the Gulf of Mexico along the S.E. coast of the U.S.A. The N.E. trades cause a great drift of waters—the N. Equa-

torial current, from E. to W. across the Atlantic Ocean N. of the equator. Part of this current skirts the outer shores of the W. Indies, but the greater portion enters the Caribbean Sea and thence passes to the Gulf of Mexico. Here the piling up of waters causes a stream current to issue from the Gulf of Mexico between Florida and Cuba. This current unites with the branch which keeps outside the W. Indies to form the Gulf Stream.

The combined current follows the direction of the coast; it decreases steadily in rate of flow, depth, and temperature, but increases in width.

On reaching the latitudes of the prevailing westerlies the Gulf Stream loses its stream character and becomes a great drift. Its waters are spread out like a fan, and, instead of there being a broad ocean river, there is a general movement of the whole surface waters of the ocean which, pushed by the winds, drift towards the coasts of N.W. Europe. This drift current is called the Gulf Stream drift or

the N. Atlantic drift. It influences the climate of W. Europe by raising the winter temperature, but this power depends mainly on the prevailing westerlies. See Weather.

Gulfweed (*Sargassum bacciferum*). Seaweed of the class Phaeophyceae. It has narrow,



Gulfweed. Leaves and fruit of the Sargasso Sea seaweed

stalked leaves, with stalked air-bladders at their base. It floats on the sea, forming vast fields that impede shipping. Detached pieces

are often deposited on distant shores by the Gulf Stream. Its celebrated headquarters is in the Atlantic, where it is estimated to cover an area of 200,000 sq. m., known as the Sargasso Sea, and almost unaltered since the days when Columbus encountered it about 400 leagues to the W. of the Canaries, to the great alarm of his men, who imagined it to be attached to rocks.

Gull. Order (*Laridae*) of seabirds, comprising about 50 species. It includes the various genera commonly known as gulls, terns, kittiwakes, and skuas. Most are grey and white in colour, have long and powerful wings, and are web-footed. All are fine swimmers and fliers, and many of them divers. The majority haunt the coasts,

his medical degree at London University in 1841, having gained the necessary knowledge by securing a minor appointment at Guy's Hospital and there attending the lectures. At Guy's, where he was lecturer and then physician, he made his reputation by his skill in dealing with disease, and he enhanced it after the recovery of the prince of Wales, whom he attended, from typhoid in 1871. He was then made a baronet. Gull died in London, Jan. 29, 1890.



Sir William Gull,
British physician



Gull. Left to right, Black-headed gull, *Larus ridibundus*; Herring gull, *L. argentatus*; Common gull, *L. canus*

usually in flocks, but are frequently found far inland during severe weather. Gulls are often seen following the plough in search of grubs, and the assemblage of vast flocks of black-headed gulls is a common sight in London during winter. When at sea they feed on fishes and small crustaceans, and serve as useful shore scavengers. Gulls are all migratory, either wholly or partially. Their large eggs, of which they lay usually two or three a season, are in many places collected for the table. Most gulls nest on the cliffs; some, as the black-headed gulls, in the marshes.

Among the more familiar species are the common gull, which is really less common than many others, and only visits England in winter; the black-headed gull, which is common around the coasts, has a red beak, and develops a dark-brown head and neck in summer; and the herring gull, a large bird measuring nearly 2 ft. in length, which has a yellow beak, with red legs, and yellow rings round the eyes. *See Bird.*

Gull, SIR WILLIAM WITHEY (1816-90). British physician. Born at Colchester, Dec. 31, 1816, he began life as a schoolmaster. Turning, however, to medicine, he took

Gulland, JOHN WILLIAM (1864-1920). British politician. Born at Edinburgh, he was educated at the High School and University. He became a corn merchant, and was interested in the municipal affairs of Edinburgh. He was M.P. for Dumfries Burghs, 1906-18; secretary to the Scottish Liberal committee in the House of Commons, 1906-9; junior lord of the



John Wm. Gulland,
British politician
Russell

Treasury and Scottish whip, 1909-15; and joint-parliamentary secretary to the Treasury, 1915-17. He died Jan. 27, 1920.

Gullane. Village and watering-place of Haddingtonshire, Scotland. It stands on Gullane Bay, an opening of the Firth of Forth, 4 m. from N. Berwick and 19½ from Edinburgh. It is visited for its bathing, and there are golf links. The name means a little lake. Pop. 920.

Gullet (Lat. *gula*, throat). Tube leading from the pharynx to the stomach through which food passes. *See Oesophagus.*

"Gulliver's Travels. Satiric work of fiction by Jonathan Swift, parts of which have come to be regarded chiefly as a children's story book. It was first published pseudonymously in 1726 as *Travels into Several Remote Nations of the World by Lemuel Gulliver*. It is divided into four parts, telling of as many voyages; to Lilliput and to Brobdingnag, in both of which the satire is political; to Laputa, satirising philosophers and men of science; and to the Houyhnhnms, where the satire degenerates into misanthropy. Apart from the satire, sometimes playful and frequently bitter, it is one of the most original and convincing works of extravagant fiction. The idea is borrowed from the *Vera Historia*, or *True History*, of Lucian (*q.v.*),

which also inspired Cyrano de Bergerac's *Voyage à la Lune*. *See Swift.*

Gully (Lat. *gula*, throat). Term meaning a channel worn in the ground by running water, a small steep-sided valley or ravine, or a ditch or deep gutter.



Gulliver watching the Lilliputian army marching between his legs

From a drawing by T. Morten

Gully, JOHN (1783-1863). British sportsman. Born at the Crown Inn, Wick, of which his father was the proprietor, Aug. 21, 1783, he was brought up as a butcher. While imprisoned for debt in the Marshalsea he made the acquaintance of Hen Pearce, the Game Chicken, who obtained his release by interesting some patrons of the ring in his behalf. A match was made between Gully and Pearce, and the Chicken won. Gully's later victories established his reputation.

Retiring from the ring in 1808, he became a professional betting man and amassed a large fortune, which he invested in collieries. He won the St. Leger with Margrave in 1832, pulled off the double event at Epsom in 1846 by winning the Derby with Pyrrhus I and the Oaks with Mendicant, and in 1854 won the 2,000 Guineas with Hermit (not the Derby winner of 1867) and the Derby with Andover. Gully represented Pontefract in parliament. He died March 9, 1863.

Gully Ravine. Name given to a deep cleft running inwards towards Kithria from a point near Beach Y at the S.W. extremity of the Gallipoli peninsula. Strongly fortified by the Turks, it twisted N.E. between overhanging hills. It was 200 ft. high in places and covered with thick green undergrowth. On June 28, 1915, it was attacked by Gen. Hunter-Weston with the 29th division, 156th brigade of the Lowland division, and the Indian brigade. The gains were definite and considerable. See Gallipoli, Campaign in.

Gum (*Eucalyptus*). Large genus of tall evergreen trees of the natural order Myrtaceae. With few exceptions they are natives of Australia, where they are the dominant trees of the forests. They have undivided, leathery, and usually alternate leaves. The upper part of the calyx and the corolla are shed when the flower opens, so that the great number of stamens form the most conspicuous feature of the expanded blossom. Eucalyptus oil is obtained from the leaves of *E. globulus*.

Some of the species rapidly attain enormous proportions, the height frequently exceeding those of the giant sequoias of California. *E. amygdalina* has been recorded of the height of 522 ft. The girth of these big trees at 5 ft. from the ground averages from 40 ft. to 50 ft., though they have been known as much as 88 ft. Planks over 200 ft. long have been cut from them. Some species shed the outer bark in long thin strips; but the under bark is deliberately stripped for roofing houses and many trees

are killed by this process. Fallen timber rapidly decays. Among other products of the gum trees is a kind of kino, which exudes from the tree as a resinous juice, and has great astringent properties. The timber is valuable for many purposes, especially where beams of great length are required.

Gum (Lat. *gummi*). Adhesive and thickening agent. True gum is the exudation and sometimes the juice of trees and plants. It is soluble in water. The best is gum arabic. Tragacanth, the chief example of gums containing bassorin, is obtained by making incisions in the stem of a low bush growing in Asia Minor and Persia. The dried juice absorbs fifty times its own weight in water, and once melted is a mucilage (*q.v.*) rather than an adhesive. Both it and gum arabic are used in pharmacy to contain insoluble substances in pills, etc.

Gum resins are also the products of plants, and consist of a mixture of gum—soluble in water—and resin, only soluble in alcohol—such as ammoniacum, myrrh, etc. Plum, cherry, almond, and other fruit trees exude gum, which yield arabinose or oxalic acid, according to the way it is treated. Gum substitute, or British gum, is made by converting starch into dextrin either by heating or treating with acids, and is found superior to real gums as an adhesive for postage stamps, being easily dissolved and easily spread. The best known gum resins are ammoniacum asafetida, galbanum, and myrrh. These are all used in the practice of medicine.

Gum arabic is dried gum obtained from the stem and branches of various species of *Acacia*, the finest kind being obtained from *Acacia Senegal*. The acacias are small trees growing freely in W. Africa, N. of the river Senegal, and also abundant in S. Nubia, Kordofan, and E. Africa. The Kordofan gum which is most prized is exported from Alexandria and occurs in ovoid, opaque, white tears, the largest being of the size of a hazel nut. Inferior kinds of gum arabic from Morocco, Cape Colony, East India, and Australia are mostly coloured, and although not suitable for use in medicine, and in the manufacture of pastilles, are much used in the industries, and as an adhesive.



Gum arabic, flowers of *Acacia Senegal*

Gum OR GINGIVA. Name for the fleshy tissue which surrounds the margin of the upper and lower jaws. The gums are covered by mucous membrane which is continuous with that of the mouth. Inflammation of the gums generally arises from a neglect of the teeth. It is also seen in scurvy, and in persons who have been taking mercurial preparations for a considerable time. Chronic inflammation of the gum may eventually lead to loosening and falling out of the teeth. An abscess at the root of a tooth may break through on the surface of the gum, the condition then being known as a gumboil.

Pyorrhoea alveolaris is an inflammatory state of the gums associated with the formation of pus between the teeth and the gum. The condition is very apt to affect the general health, producing anaemia, disorders of digestion, and pains in the limbs resembling rheumatism. Removal of the teeth is the best treatment. Chronic lead poisoning, which is sometimes seen among smelters, printers, and plumbers, produces a blue line at the margin of the gums from the deposit of lead sulphide in the tissues. See Pyorrhoea; Teeth.

Gumbinnen. Town of E. Prussia, Germany. It is about 66 m. from Königsberg, and stands at the junction of the rivers Rominte and Pissa. The chief buildings are churches, a hospital, etc., and the industries include the making of machinery, weaving, and tanning. Gumbinnen was made a town by Frederick William I of Prussia, who settled some religious refugees here in the 18th century. During the early part of the Great War the district was invaded by the Russians, and there was a good deal of fighting around here. Pop. 14,500.

Gumbinnen, BATTLE OF. Fought between the Germans and the Russians, Aug. 20, 1914. Little more than a fortnight after Germany's declaration of war, Aug. 1, 1914, Russia had in motion several large armies, one of which invaded E. Prussia from the N., while a second struck from the S. The former, called the Army of the Niemen, consisted of 250,000 men under Rennenkampf; the latter, called the army of the Nareff, led by Samsonoff, was of the same strength.

The German forces, commanded by Von François, were in this area much inferior to the Russian in numbers and in quality. After raids and reconnaissances across the frontier, Rennenkampf, gaining a foothold in enemy territory, advanced along the railway that ran

from Kovno, his main base, to Königsberg. By Aug. 16 his front extended from Pillkallen on the N. to Goldap on the S. On Aug. 17 Von François held him up for some hours at Stallupönen, but after a stubborn fight was forced to retire on Gumbinnen, 10 m. farther along the railway, where he was met and defeated on Aug. 20.

Attacking frontally, the Russians rushed the German positions, but the Germans reformed and counter-attacked, and the battle fluctuated for some time. In the end the numbers of the Russians prevailed, and the Germans retreated as night fell. On the wings, both at Pillkallen and at Goldap, *Rennenkampf* was successful by Aug. 21. Von François retired on Insterburg, an important railway and road junction, but unable to hold it, withdrew to Königsberg. See *Tannenberg*, Battle of.

Gumbo OR OKRA (*Hibiscus esculentus*). Annual herb of the natural order Malvaceae. It is a native of the W. Indies, and has yellow flowers. The unripe fruits contain much mucilage, and are used in cookery for thickening soups, and for other purposes.

Gumboil. Small abscess on the gum, arising in most cases from decay at the root of a tooth.

Gum Elemi (*Canarium commune*). Tree of the natural order Burseraceae. It is a native of the Philippine Islands. The leaves are broken up into seven to nine oval leaflets. The flowers are small,



Gum Elemi. Foliage and flowers; below, leit, fruit and section

white and clustered, and the fruit has a thin olive skin and a sweet kernel. From incisions made in the bark, a fragrant resin, of the consistence of honey, exudes, and hardens on exposure. This is the elemi used in medicine.

Gummata. Tumours which may form in almost any organ or tissue of the body during the course of syphilis. Their appearance indicates an active stage of the disease requiring energetic constitutional treatment. See Syphilis.

Gummel. Town of Nigeria. It is in the Katagum portion of the Kano prov., 75 m. N.E. of Kano.

Gummersbach. Town of Germany in the Rhine prov. of Prussia. It is 25 m. E.N.E. of Cologne, and is the chief town of a district. An industrial centre, it has manufactures of electrical apparatus, carpets, textiles, paper, machinery, etc. Pop. 16,000.

Gummidge, MRS. Character in Charles Dickens's *David Copperfield*. She is the widow of Peggotty's partner, and, given a home by hospitable Peggotty, takes the most comfortable place and querulously complains that she is a "lone, lorn creetur, and everythink goes contrary with her."

Gumming. Disease or affection of fruit trees usually due to excessive richness in the soil. It manifests itself by exudations of a yellowish-brown transparent substance upon the stems or joint

branches of the trees. Trees so affected should either be transplanted into a less fertile soil or rigorously root-pruned. As a rule, gummy trees run to an excess of foliage without making much fruit. See Fruit Farming.

Gumti. River of India, in the United Provinces. It rises east of Pilibhit, and after a course of about 500 m. enters the Ganges at Saidpur, in Ghazipur District. The Gumti is the only left bank tributary of the Ganges which does not issue from the Himalayas; it depends for its water entirely upon the rains. (Lucknow is the chief town on its banks.)

Gumurdjina, GUMURZHINA OR GUMULJINA. Town of Greece, in Thrace. Known chiefly for its large annual cattle market, it is situated on the Karaga, about 70 m. S.W. of Adrianople, and 12 m. from the Aegean Sea. The district produces good wine. Pop. 8,000.

GUNS AND GUN MAKING

Capt. E. de W. S. Colver and John Leyland

A general sketch of guns in general is followed by an account of naval guns. The guns used in land warfare are more usually described as Artillery (q.v.). In addition there are articles on every kind of gun, e.g., Howitzer; Machine gun; Stokes gun, etc., and on the various explosives, e.g. Cordite; Gunpowder; Melinite, etc. See also Ammunition; Ballistics; Explosives; Firearms; Pistol; Revolver; Rifle, etc.

Gun (Anglo-Saxon, *gonne*, machine for throwing missiles) is a term somewhat loosely employed to describe several widely different varieties of firearms and, more particularly, relatively long-barrelled varieties. Amongst the smaller varieties of firearms, the term gun is chiefly confined to long-barrelled, smooth-bore sporting weapons and the automatically operated rifles termed machine guns. Among the larger firearms, gun is the designation of the long-barrelled rifled weapons, which, on account of their stronger construction, permitting higher chamber pressures, and consequently greater muzzle velocity of the projectile, are able to throw the latter a greater distance with a comparatively flat trajectory in contradistinction to the more lightly constructed howitzers, which, though they may throw a projectile of equal or greater weight for similar calibres, work at a lower pressure, have a shorter range, and attain this by a very steep or high trajectory. Howitzers are usually rifled, but many of the very light varieties introduced to aid trench fighting in the Great War are smooth bored.

The early history and development of the sporting gun is the same as that of the military wea-

pon, and it was not until it was recognized, towards the middle of the 19th century, that a rifled weapon was essential for military purposes, that the two classes became distinctive. Modern sporting guns are essentially designed to throw a charge of small shot to an effective range of 50 to 90 yards, the barrels being smooth bored. If the bore is parallel throughout it is known as cylinder, but if it is constricted towards the muzzle in order to increase the effective range and prevent the shot spreading so widely it is termed choke (half or full). Most guns are double barrelled, and except for special purposes it is usual for the right barrel to be cylinder and the left choke bored. The size of the bore is designated by a number, this being a survival from the days of the musket and founded on the weight of the single lead bullet which the barrel was designed to use. The most usual size is 12 bore, but 8 and 4 bore guns are employed for duck shooting, and 16, 20, and 28 bore guns are used to some extent when an exceptionally light weapon is desired.

The question of weight has always been an important one in the manufacture of sporting weapons, it being essential to attain the

maximum strength with the minimum weight. To obtain the requisite strength and toughness in the barrels they were for many years constructed of strands of wrought iron and steel twisted and then welded together (Damascus barrels), and these are still frequently employed, but now are chiefly valued for the beauty of the etched surface, as modern alloy steels provide ample strength and toughness.

Breech-loaders and Automatics

All modern weapons are breech-loading and employ central fire cartridges. In some guns the striking mechanism is external and these are termed hammer guns, while in others the striking mechanism is enclosed in the lock, giving a neater appearance, such weapons being termed hammerless. Some of the latter class, known as ejectors, automatically throw out the empty cartridge case after a shot has been fired, and a further development is the single trigger gun in which one trigger controls both barrels. Single-barrel repeating and automatic guns carrying five to eight cartridges in a magazine have also been introduced, but are too heavy to be popular. To afford safety in carrying the weapons loaded, hammer guns can be placed at half cock, and the hammerless varieties have a safety catch.

In the highest class guns specially well-figured walnut is employed for the stocks, and the greatest skill is lavished on elaborate engraving of the lock plates and breech block. English guns have the highest reputation for beauty and accuracy of workmanship, while Belgian guns supply a more popular demand. After the Great War the Birmingham Small Arms Co. instituted a policy of mass production of plain finished, reliable guns at a competitive price. Before any gun is purchased it should be submitted to a firing proof for strength as evidenced by a proof mark stamped on the barrels, while smokeless powder cartridges should not be used in any gun which has not been tested for the higher pressures involved and does not bear the additional stamp "nitro proof."

E. W. de S. Colver

NAVAL GUNS. Naval guns are those engines on board fighting ships from which projectiles are discharged by explosive force. Edward III had iron and brass guns in his ships, and during subsequent centuries the mechanisms increased largely in number and variety. In Elizabeth's time ships carried the double cannon or cannon-royal, with 8½-in. bore, firing a 64-pound projectile, and the demi-cannon, which was a 30-pounder. Smaller

guns were the culverins, which were longer in proportion to bore, and fired shots ranging from 17 pounds to one pound. They comprised whole and demi-culverins, serpentes, sakers, minions, falcons, robinets, and bases.

Other guns something like the modern howitzer type were called perriers, and were intended to discharge stone balls, carcass or case-shot, fire-balls and the like; and there were mortar pieces called petards and murderers, the latter being breech-loaders, like some other types of the time. Early guns were made of bronze and iron bars hooped together. The Sovereign of the Seas, in Charles I's reign, mounted 102 brass guns. Cast-iron guns were made in England as early as 1545, and this construction continued for 300 years or more.

All these guns were smooth-bored, firing round shot. The ships in the great war with France carried 32-pounders and 42-pounders as the lower deck armament, and shorter and lighter pieces called carronades, from Carron in Scotland where they were first made. These ranged upward from 6 to 68-pounders. The carronade was intended to project large-calibre shots with accuracy to the distance at which the old wooden ships generally engaged, viz. 400 to 600 yards. Guns of this character continued to be made until about 1830, when a more effective 32-pounder, weighing 50 tons, was introduced. Large-calibre guns were meanwhile being brought in for the firing of shells and hollow shot. They were first introduced in the French navy by Col. Paixhans in 1824.

Introduction of Rifling

The Armstrong system of "built-up guns," formed of wrought iron with steel for the inner tube, dating from 1856, put an end to the earlier manner of construction. Rifled guns began to be introduced about 1850, firing elongated projectiles, and were tried in the Crimean War. The really effective rifled gun was due to the inventive ingenuity of W. G. (afterwards Lord) Armstrong. Its parts were the A-tube, or barrel, with powder and shot chamber, and the polygroove rifled bore; the breech-piece of wrought iron; three to six coils or jackets which were shrunk on the A-tube after expansion by heat; the trunnion ring, and other fittings.

Some difficulties occurred with the early breech-loading guns, and delays resulted which gave France and Germany the lead. It was not until 1881 that the manufacture of a fully satisfactory type really began in England. The immense advantages of the new guns

were manifest, not the least of them being that the possibility was secured of easily repairing guns by renewing the inner tube or "lining," when eroded by the action of deleterious gases. Guns increased enormously in size, weight, and power, until the 16½-in., 111-ton was mounted in the Benbow, Sans Pareil, and Victoria. These huge guns were not used in subsequent ships, because only two of them could be placed in a single ship, and the advantage was seen of mounting, in such ships as the Anson, four 67-ton guns, which could be fired more rapidly, and ultimately could discharge a greater weight of metal.

Essentials of Naval Guns

The standard type of big gun for the British navy was afterwards for many years the 12-in., which was mounted on all the ships prior to the super-Dreadnoughts. The chief requirements sought were, and still are, great range, rapidity and accuracy of fire, and high striking-energy with the minimum weight.

In the Russo-Japanese War the effective range was about 6,000 yards; before the Great War it had increased nominally to 9,000 or 10,000 yards, and at the Jutland Battle fire was opened at a range of nearly 19,000 yards.

Enormous strength is required to withstand the pressure of modern cordite and other propellant charges, and steel of perfect homogeneity, elasticity, and break-resisting strength is used. The breech block must combine the smallest possible weight consistent with complete resistance to the back pressure of the gases. The mechanism must ensure the most rapid opening of the breech, charging of the gun, closing the breech, and firing the gun. The mounting and carriage of the guns, which are usually placed in pairs, must provide for the easiest and smoothest working in elevation and in training on the roller-path, in order to find the target and attain immediate accuracy of aim. The whole of the weights of the gun and gun-house are distributed over a large area, and are perfectly balanced for ease of rotation.

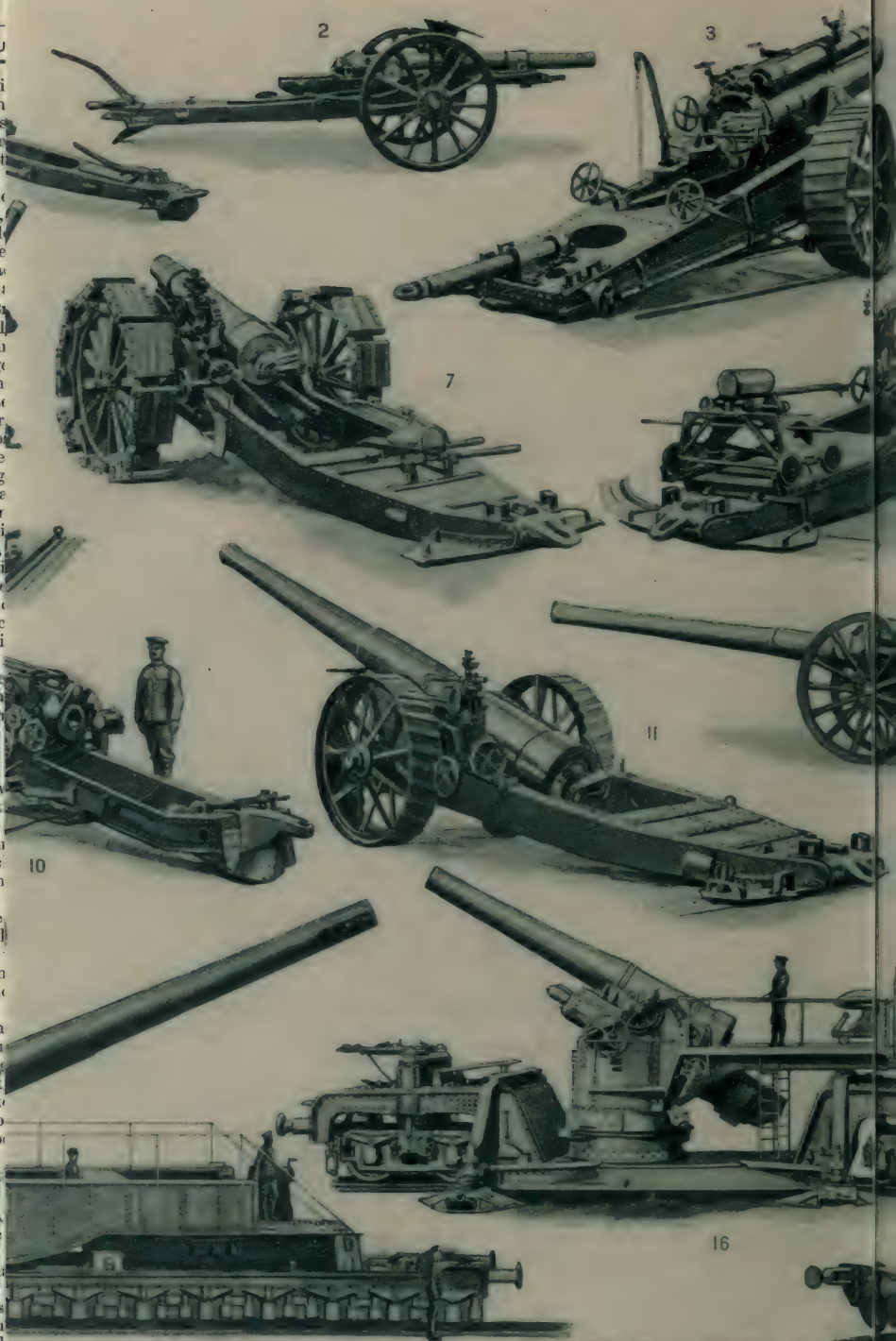
The 12-in. gun, its original length being 45 times its calibre, weighed over 57 tons, and fired a projectile of 850 lb. with a cordite charge of 309 lb. The muzzle velocity was 2,666 feet per second, and the muzzle energy 41,000 foot-tons. The complete gear for working two guns of this character, concentrated within the moving mass, would represent a weight of about 600 tons, enclosed in a barbettes mounting or gun-house. The



GUNS.

MACHINE GUNS AND TRENCH MORTARS (top left corner): A. Lewis, mou
GUNS AND HOWITZERS: 1. 4.5-in. howitzer. 2. 18-pdr. field gun, mark
9. 9.2-in. howitzer 10. 60-pdr., mark I. 11. 6-in., mark XIX. 12. 4'

The relative sizes of the



1. 12-in. howitzer, showing loading derriek. 2. 13-in. howitzer, showing loading derriek. 3. 8-in. howitzer. 4. 13-pdr. (weight 6 cwt.). 5. 6-in. howitzer (30 cwt.). 6. 12-in. howitzer, showing loading derriek. 7. 12-in. howitzer, showing loading derriek. 8. 12-in. howitzer, showing loading derriek. 9. 12-in. howitzer, showing loading derriek. 10. 12-in. howitzer, showing loading derriek. 11. 12-in. howitzer, showing loading derriek. 12. 12-in. howitzer, showing loading derriek. 13. 15-in. howitzer, showing loading derriek. 14. 15-in. naval guns. 15. 14-in., mark III, on

nted for use on aeroplanes.

B. Lewin, for trench work. C. Madsen. D. Hotchkiss. E. 303 Vickers.

IV, on mark III carriage.

3. 8-in. howitzer.

4. 13-pdr. (weight 6 cwt.).

5. 6-in. howitzer (30 cwt.).

6. 12-in. howitzer, showing loading derriek.

7-in. 13. 15-in. howitzer, showing loading derriek.

14. 15-in. naval guns.

15. 14-in., mark III, on

guns and howitzers may be judged by the figures of the men

Expressly drawn for Harmsworth's Universal Encyclopædia



1. Stokes trench mortar and shell. 2. 3-in. anti-aircraft (20 cwt.). 3. 6-in. howitzer (26 cwt.). 4. 8-in. howitzer, mark VII, on a carriage. 5. Large calibre trench mortar. 6. Heavy bomb thrower. 7. 12-in. howitzer, mark V, rly. mounting. 8. 12-in. howitzer, mark IX, rly. mounting.

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ammunition hoists are centrally situated, and trolleys from the magazines or running gear load the projectiles and charges on the platform below, whence by hydraulic or electric mechanism they are rapidly raised to a point behind the breech of the gun and automatically rammed home. With the increase of length to 50 calibres, and the installation of 13.5-in. and 15-in. guns, the weights have been increased enormously, as will be seen below. In the U.S. and Japanese navies 16-in. guns have been mounted in the latest ships.

Manufacture of Big Guns

In the manufacture of modern big guns the operation begins with the casting of the steel ingot and the forging of it under pressure in some cases of 5,000 tons. The ingot is bored by means of a trepanning machine, and forged upon a mandrel into the form of a tube at a red heat under a powerful press which has a downward force of 3,500 tons or more, the tube being turned continuously during the operation. Having thus been forged approximately to the required dimensions, the gun tube is next turned by lathes, and bored by long machines, working usually from both ends at the same time, hardening or tempering being carried out in a bath of rape-seed oil. In British practice the gun is next wound with steel ribbon, about a quarter of an inch wide and a tenth of an inch thick. On the 12-in. gun there is usually a length of about 120 miles, weighing nearly 14 tons, with 14 layers at the muzzle and 75 at the breech. Then comes the shrinking on of the outer jacket, at a very high temperature, which when cooled becomes an integral part of the gun. After these operations the gun is internally rifled by special plant, and externally machined. German guns made by the Krupp company are of the "built-up" type, strengthened by the shrinking on of outer tubes, whereby any tendency of the gun to droop at the muzzle is stated to be obviated.

Improvements in Design

The gun, with its breech and intricate fittings, its complex mounting, and its optical sighting and firing gear, represents one of the finest achievements of human ingenuity. A single lever, moved in various directions by hand, works all the machinery in the gun-house, opening the breech, placing the gun in the loading position, raising the loading cages, operating the rammer, and closing the breech.

During the Great War improvements in guns were directed chiefly to increasing the range and accu-

acy of fire, mainly by altering the shape of the projectiles, increasing the elevation of the gun, and adding to the muzzle velocity. The enormous increase in the power of modern guns will be seen from the table on this page, which shows the principal guns, indicating their calibre-lengths. The figures of velocity and energy in the case of the 16-in. gun are approximations.

	12-in. 50 cal.	13.5-in. 45 cal.	15-in. 45 cal.	16-in. 45 cal.
Weight (tons)	67	76½	97	117
Projectile (lb.)	850	1,400	1,900	2,250
Muzzle velocity (foot-seconds)	3,600	2,500	2,500	2,450
Muzzle energy (foot-tons) ..	53,400	60,670	82,340	93,230

It will be observed that, though the muzzle velocity progressively decreases, the muzzle energy is continually increasing.

The 13.5-in. was first mounted in the Orion class of battleships, 1911-12, and the Lion and Tiger classes of battle-cruisers. The 15-in. gun was first installed in the Queen Elizabeth. With the exception of a few 18-in. guns mounted in monitors during the Great War, the largest gun in the British service is the 15-in., of which eight were mounted in the battle-cruiser Hood, with secondary guns, twelve of 5.5-in. and four of 4-in., the latter being mounted for high-angle fire against aircraft.

Smaller Naval Weapons

Little needs to be said of the lesser guns of the British navy. They are all mechanisms analogous in make to the larger ones. The 9.2-in. fires a projectile of 380 lb. The 6-in. discharges ten aimed rounds of 100 lb. per minute. There are also the 5.5-in., the 4.7-in., and the 4-in. semi-automatic gun for flotilla leaders, also the 4-in. high-angle fire gun (rising to 80 or 90 degrees) for anti-aircraft practice. During the Great War some special types of guns were introduced, including a 12-in. which was mounted in one or more submarines, 11-in. and 7.5-in. howitzers, a 10-in. muzzle-loading bomb-thrower for use against submarines, and a Y-gun for rapid firing of bombs, loading alternately at one breech and the other.

John Leyland

Gunboat. Term properly applied to small craft capable of operating in shallow waters and limited areas, and in which the gun assumes an unusual importance. In the British navy there are four classes of gunboats: (1) River gunboats, originally designed for service on the great rivers of China, were revived in the Great War for the Mesopotamian campaign. These last were of two

classes, the larger being 238 ft. long, with a draught of 4 ft. and a speed of 14 knots, carrying two 6-in., two 12-pr., and six machine guns; the others (with names ending in "fly") were 126 ft. long, with a draught of 2 ft. and a speed of 9.5 knots, armed with one 4-in., one 6-pr., and four machine guns.

(2) Coast service gunboats, which

are intended for service in the estuaries of the Chinese and African rivers. They are much larger than the river gunboats, displacing from 800 to 1,200 tons. None have been built for many years. (3) Coast defence gunboats, which were built between 1870 and 1880, armed with a single heavy gun in the bows. They displaced not above 370 tons, and were of little practical use. (4) The smaller monitors built for service in the Great War were officially classed as gunboats. The earliest gunboat to be built was the *Staunch*, designed by G. W. Rendel and built at Elswick, 1867. She was nothing more than a floating gun carriage, carrying a 9-in. gun, which could be lowered into a well by hydraulic power. She displaced 180 tons and had a speed of 6½ knots, and an overall length of 75 ft. See *Battleship*; *Destroyer*; *Navy*.

Gunbus. Slang term for any aeroplane which mounts one or more guns. It is more especially applied to a gun-carrying aeroplane of a large type.

Guncotton. Nitrocellulose of the highest possible degree of nitration, containing about 13 p.c. of nitrogen in commercial practice. Cotton waste is the raw material generally employed in the manufacture of guncotton. It is given a drastic treatment with alkali to remove all grease, boiled with several changes of water, dried, picked over by hand to remove impurities, opened out by a teasing machine, and then desiccated. The nitrating acid contains about 75 p.c. sulphuric acid, 17 p.c. nitric acid, and 8 p.c. water, the proportions varying somewhat according to the process employed, these being detailed in the article on nitrocellulose. When nitration is complete the guncotton is immersed in water and thoroughly washed to remove the bulk of the acids, and then undergoes a treatment, termed stabilisation, to

remove unstable products, which, if left in, have a most deleterious effect on its keeping properties. The process consists of boiling the guncotton in about 10 series of waters, a trace of alkali being sometimes added, the total boiling lasting about 50 hours. Passing the guncotton through a pulping machine reduces it to a fine state of division; it is then passed over a trap to remove foreign matter, and then washed again in a poacher, a small percentage of calcium carbonate added, and then the water content reduced to about 25 p.c., and the pulp moulded into blocks by hydraulic pressure.

Wet guncotton is very insensitive and a satisfactory blasting explosive if primed with dry guncotton initiated with a fulminate detonator. At one time it found extensive use for filling mines, torpedoes, etc., but has been displaced by trinitrotoluene, and at present is only employed for military blasting, being pressed into 15 oz. slabs. In the dry state guncotton is very sensitive to friction and percussion, and must be handled with great care. In this condition it is used for priming wet guncotton and other explosives, and as an ingredient of cordite (*q.v.*). See Explosives; Nitrocellulose; Smokeless Powder.

Gundagai. Town of New South Wales, Australia. It stands on the Murrumbidgee river, 287 m. by rly. S.W. of Sydney, in a rich wheat and maize producing district. Pop. 1,181.

Gunib. Town of Daghestan in the Caucasus. It is situated on the Karakoi-su, on an almost perpendicular rock in a narrow pass, and is strongly fortified.

Gunjah OR **GANJA.** Dried flowering tops of the female plants of *cannabis indica*, the Indian hemp. It is sometimes smoked as a kind of tobacco. See Ganja.

Gun Licence. Permit necessary for the possession of firearms. In Great Britain the licence, which is administered by the county councils and is rigidly enforced, permits the owner to carry firearms. It costs 10s. a year, and expires on July 31. Soldiers carrying rifles or revolvers in the performance of duty or whilst shooting at a target, are exempt, as are also holders of game licences. The possession of a gun licence does not absolve the owner from the necessity of applying for a police permit to possess firearms. See Firearms.

Gunmakers' Company. London city livery company. It was granted a charter in 1638. By an Act of 1814 it was provided that all London-made gun barrels should be marked by the company



Gunmakers' Company arms

Street, London, E.C.

Gunmetal. An alloy of copper and tin, usually in proportion of 90 parts of the former and 10 of the latter. It thus belongs to that class of alloys known as bronzes. Its importance was at one time much greater than it is to-day, as it was for a long period the chief metal used in the manufacture of cannon, its place now in that connexion being taken by steel.

It is possible that the Chinese prepared gun-metal and used it in the making of ordnance long before any other people; the Arabs prepared such cannon at the beginning of the twelfth century; while it is probable that the cannon used by the Turks at the siege of Constantinople in 1394 were also of this alloy. Its uses to-day lie chiefly in the construction of parts of machinery which require to have great strength but where steel or iron cannot be employed, as in certain classes of pumps, and for the bearings of heavy shafts. See Alloys; Bronze.

Gunn, WILLIAM (1858-1921). English cricketer. Born in Nottingham, he began to play cricket for the county in 1880, and until his retirement in 1904, was one of the mainstays of the team. He made 48 centuries, and in 25 seasons scored 24,899 runs. Playing for England he scored 228 against the Australians in 1890,

after being tested at their proof house in Commercial Road, E., and the company's charter was recognized by the Gun Barrel Proof Act of 1868. The offices are at 46, Queen Victoria

and his highest score was 273 against Derbyshire. Gunn's play is regarded by most authorities as model batting. A man of great height and strength, he was in his prime a superb fieldsman, while he played association football for Notts county, and also represented England. For many years he was the head of a business of cricket outfitters. He died in Nottingham, Jan. 29, 1921. Two of Gunn's nephews, John and George, played cricket regularly for Nottinghamshire.

Gunnedah. Town of New South Wales, Australia, in Buckland co. It is situated on the Namoi river, and is a road junction, 191 m. from Newcastle by rail. The district is liable to inundation when the rains are heavy. Good coal occurs in the neighbourhood. Pop. 4,100.

Gunner. Private soldier in the artillery who serves a gun, as distinguished from a driver, who is in charge of horses. The rank of master gunner is peculiar to the garrison artillery. The 3rd class master gunner holds the highest rank of non-commissioned officer, and master gunners of the 1st or 2nd class are warrant officers. See Artillery, Royal.

Gunnersbury. District of Middlesex, England. It is between Ealing and Acton on the N. and Brentford, Kew, and Chiswick on the S., and is served by the District and N.L. Rlys. The estate, which includes a park, was purchased in 1761 for Princess Amelia, daughter of George II, whose parties here were famous. Gunnersbury House was sold in 1786, pulled down in 1801, rebuilt on a smaller scale, and superseded in turn by a mansion belonging to the Rothschild family, into whose hands the estate came about the middle of the 19th cent.

GUNNERY IN NAVAL WARFARE

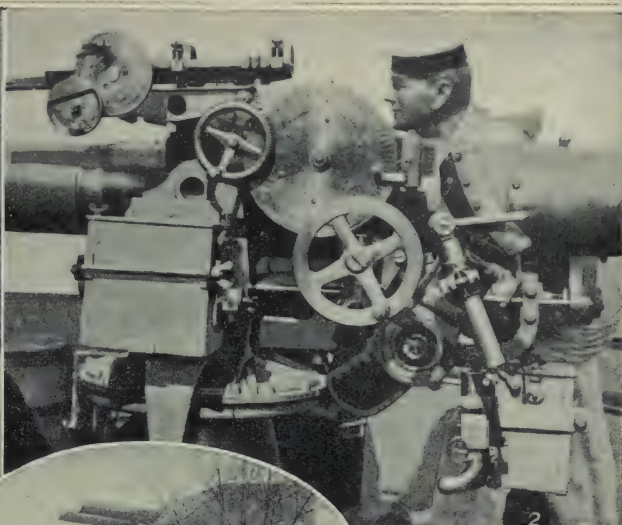
John Leyland, Author, *The Royal Navy*, etc.

This article deals with naval gunnery, corresponding facts about land guns being in the articles Artillery; Ballistics, etc. See also Ammunition; Explosives; Gun

Naval gunnery is an exact science, and at the same time a practical art. It is based upon knowledge of internal ballistics, by which is meant the behaviour of the gun and its projectile under the pressure of the gases generated, and of external ballistics, which are concerned with the flight of the projectile at various ranges, and in various conditions, this matter being the first condition of accurate aim, apart from the movement of the firing ship and her target. Upon the efficient use of her guns depends the fighting value of a battleship, battle-cruiser or light cruiser. The gun remains supreme in action.

By the gun the Blücher was destroyed in the Dogger Bank battle, and by the gun the Indefatigable, Invincible, and Queen Mary were sunk in the battle of Jutland. By the gun also the German Fleet suffered such terrific injury in that engagement, though most of its ships returned to port, that the fleet never issued to sea again to seek another fight. Conditions being equal, the biggest gun will prevail. Combined with speed, it has often enabled a ship to choose her own distance for firing, outside the range of her adversary.

The tendency of recent progress has been to increase the firing



1. Loading a 6-in. gun. 2. Spotter at the sights of a 12-pdr. 3. Dummy barbettes, Gunnery School, Whale Island. 4. "The Knocker Out," a device for teaching gun-laying by means of a rifle, fitted with Morris tube,

on the barrette, which is aimed at a target fastened to the chase of the gun. 5. 13.5-in. guns firing. 6. "The Dotter" system of teaching gun-laying, in which the sights are electrically connected with a target disk

GUNNERY: INCIDENTS IN THE TRAINING OF THE NAVAL GUNNER

Stephen Cribb, Southsea

range. That was the reason for the introduction of the "all-big-gun" Dreadnought. Range has been increased mainly by adding to the propelling energy within the gun, and elevating the angle of fire. It is exceedingly difficult to master even the elements involved in the hitting of an enemy's ship at extreme range. The utmost accuracy is required in scientific gunnery, and it must be continuous accuracy. The opposing ships are moving at high speed, and the range is constantly changing—it may vary as much as 900 yards in a minute—and it is changing at a rate that is not constant. Fleets rarely move upon parallel courses. Difficulties arise also from mist and the condition of the atmosphere, wind, temperature, and other factors. At great ranges the trajectory, that is the curve of flight of the projectile, is necessarily very high, its fall very steep, and the danger zone therefore narrow.

Moving Targets

But there is another important factor always presented to the gunnery officer. The ships are moving swiftly, and the position of the target, relatively to the firing ship, changes during the flight of the projectile, which may cover a period of 8, 10, 12, or even more seconds, according to the range. Therefore the gun must be aimed, not at the ship in the position she occupies at the instant of firing, but at the position she will occupy at the moment when the projectile arrives.

At first sight it may seem that the problem of aiming at a place where a swiftly moving enemy will arrive a few seconds later is insoluble. But there is a guide to her future position in a knowledge of the course she has previously pursued, whether a direct course or a curved course under helm. In order that this may be ascertained and the range found and retained, observing and reckoning instruments of the finest and most ingenious character have been devised. It is necessary first to ascertain the range, bearing, and speed of the enemy, next to integrate these factors with the speed and changing curve of the firing ship, and then to transmit them instantaneously to the guns.

The system of training in range-finding, and retaining and keeping the sights on the target, employed at the British naval gunnery establishment at Whale Island, Portsmouth, and in the tenders, and at the Gunnery School, Devonport, is quite wonderful. Single and double "dotter" apparatus for teaching men to fire with accuracy

without expending ammunition, deflection-teachers, and sub-calibre arrangements are employed.

At Devonport is a rocking platform, actuated by mechanism which has about 200 movements, and whose speed can be adapted to represent the rolling and pitching movements of a battleship or light cruiser. Thus gunlayers are trained in keeping their sights on the target, and attain remarkable accuracy of observation and shooting.

Range-finders up to a 15-ft. base line have been installed in British ships in elevated armoured positions. Sometimes they are placed in low armoured towers, and are often installed within the armoured structure of the gun turret, with large-angle prismatic sighting telescopes. It was no uncommon thing before the war for the service target to be hit, even at a long range, by the first shot. In association with the range-finder, electro-mechanical devices are installed to establish fire-control, by determining the rate of change of range and bearing of the enemy, and then of transmitting the information to the gunner. An indicator on a graduated dial affixed to the gun sights, being electrically controlled, gives the range from the control station. The sight-setter then moves a pointer round to the required place, and by his control wheel keeps this pointer always opposite to the index mark. The same system is applied to the deflection gear. The men are very highly skilled, and have all gone through the gunnery schools.

Modern Fire Control

There are recent modifications and improvements in this system, the electro-mechanical arrangements having been reduced to a very simple form of transmitting switch and gear at the dial operating the pointer. The whole tendency, seen in the actions of the Great War, has been to establish more firmly the system of fire control and direction. Advantage can be taken in director firing of the roll of the ship, which elevates the guns and increases the range, and salvo firing proved highly effective in the sea fighting.

Director firing was greatly revived before the war. The advantage was conspicuous of being able to direct a vessel's guns from a central station, where range and successive corrections could be calmly and quietly worked out apart from the confusing noises which must prevail in the vicinity of the guns. When sighting and laying mechanism became more accurate, Sir Percy Scott, director of target practice, developed the system of

controlling fire from a central station. Much is due to the experimental department at the Whale Island Gunnery School, and to Admirals Peirse and Browning, successively directors of target practice, under whom the establishment became the focus of the best gunnery brains in the British navy. For several years practically every gunnery advance emanated from it. In the system of control it was feared there might arise a disposition to trust too much to the control officer and his instruments to the neglect of individual training and practice with the gun, but no such defect was discovered during the naval fighting in the Great War.

German Range-finding

The Germans employed a very efficient system of range-finding and fire direction and control, perfected during recent years, which has never been fully described, and from the ships surrendered the scientific appliances had been removed. It differed in no important degree from the British and American systems. Lord Jellicoe's dispatch spoke of the high standard of the German gunnery, resulting from the use of some such system of fire as the Petravic. In one British appliance the speed of the observing ship and the estimated direction and speed of the target were so combined that rate of change of the range and the deflection could be read off on a graduated map surface. In others a rate-of-change clock device was employed, with a pointer moving over a dial at a rate variable at will, so that from the initial range given changes of range could be transmitted corresponding as nearly as possible to the ranges given by the range-taker.

In the finest apparatus, the speed and course are almost automatically ascertained from observation. The change-of-range instrument gives a forecast of the ranges based on this knowledge, as well as the bearing of the enemy relatively to the firing ship, and the plotting can be corrected for any change of course of the latter.

It will be realized that great experience, high powers of observation, and much skill are required to use these elaborate appliances successfully. The gunnery officers of the British navy are men of the very highest training. They go through long and exhaustive courses in the theory and practical work of internal and external ballistics—the gun and its effective working. They are also in a true sense engineers, every gun turret being a mass of machinery of the most complicated character.

Gunnery School. Government establishment for the practical training of artillerymen. The chief British military gunnery school is at Shoeburyness, Essex, and is quite distinct from the experimental establishment, also situated there. The school was established here in 1849 on account of the immense firing ground afforded by the Maplin sands, which are left dry at low water. Officers after passing the Royal Military Academy at Woolwich proceed to the Gunnery School for practical training, and, in addition, courses are arranged for officers and N.C.O.'s qualifying as instructors, and for practice in the use of new weapons, and in "quick firing" with specially designed ordnance against rapidly moving targets. Separate courses are provided for the horse, field, and garrison branches of the artillery.

In 1900 a branch school for siege artillery was established at Lydd; there is a camp at Rhyader, and instruction is also given in coast defence work from the forts at the Isle of Wight. The naval gunnery school, known as H.M.S. Excellent, is situated on Whale Island in Portsmouth Harbour, and provides similar instruction for all gunnery ratings of the navy.

Gunning, ELIZABETH (1734-90). Duchess of Hamilton and of Argyll. She was the second of three daughters of an Irish squire, John Gunning of Castle Coote, co. Roscommon. With her elder sister Maria, she came to London in 1751, with the intention of going on the stage, but there the beauty of the pair made an extraordinary impression in society and among the populace. They were fêted everywhere, while crowds followed them in the streets. In 1752 Elizabeth married the 6th duke of

Hamilton (d. 1758). After being engaged to the 3rd duke of Bridgewater, she married in 1759 the marquess of Lorne, who, in 1770, succeeded his father as 5th duke of Argyll. In 1776 she was created Baroness Hamilton, with remainder to her male issue as baron. She died May 20, 1790. Two of her sons became dukes of Hamilton, and two dukes of Argyll; she also had three daughters. There are several portraits of her in existence.

Gunning, MARIA (1733-60). Countess of Coventry. Elder sister of Elizabeth Gunning, she married the 6th earl of Coventry in 1752, less than three weeks after Elizabeth's marriage to the duke of Hamilton. She was generally regarded as being more beautiful than her sister Elizabeth, and the loveliest woman at the court. In 1759 she was mobbed by an admiring crowd in Hyde Park, and was afterwards provided by the king with a military escort. She died of consumption, Oct. 1, 1760, perhaps from the use of white lead for her complexion.

Gunnison. River of Colorado, U.S.A. Rising in the S.W. part of the state, it flows W. and N.W. for 200 m., and joins the Grand, a main headstream of the Colorado. It has cut a number of deep cañons, one of granite being 40 ft. long and 2,500 ft. deep.

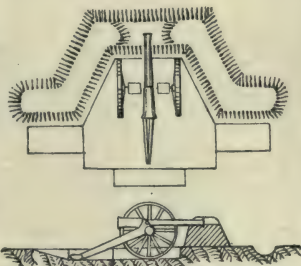
Gun Pit. Field entrenchment capable of accommodating a field gun or howitzer. The great improvement in the rate and accuracy of artillery fire in modern warfare, combined with the use of aeroplanes for reconnaissance and spotting, has rendered it almost imperative for guns to be "dug in" as soon as they reach a position from which it is intended to open fire. If hostile artillery fire is not anticipated an empalement will give protection against rifle fire. This defence consists of two banks of earth placed on the flanks of the gun about four feet apart in front and fourteen feet at the rear.

The gun pit is an elaboration of the empalement, the banks being thrown up to a height of about three feet above ground and the intervening space sunk two feet for a field gun (18-pounder). The floor of the pit must provide a solid foundation and the width of the embrasure be such as will provide for an efficient field of fire. Communication trenches link up the gun pits of the battery, the battery commander's headquarters and the gun crews' quarters. Overhead cover against observation is provided by tree branches, sods, or such other material as will harmonise with the surrounding



Maria Gunning, Countess of Coventry
From a painting by P. Coles

country, and the ground in front of the guns' muzzles is either kept wet or covered with sacking to avoid dust being blown up when the guns are discharged, thus revealing the position. When time permits the overhead cover of the pit is usually elaborated to provide protection against shrapnel and shell splinters, a roof of baulks and corrugated iron being carried on heavy timbers, and then covered with earth three to four feet thick,



Gun Pit. Diagrams showing principles of construction. Above, plan; below, elevation

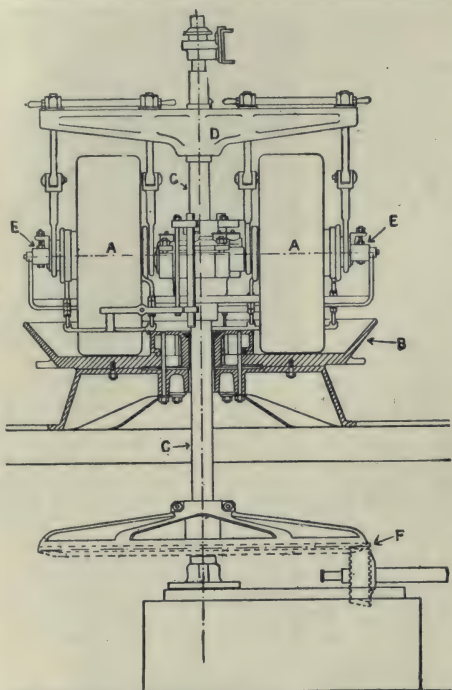
camouflage, to prevent aerial detection, being provided over all, as before. See Artillery.

Gunpowder. Oldest known explosive, essentially a mechanical mixture of saltpetre, charcoal, and sulphur. The early mixtures contained much larger proportions of the two latter ingredients than modern powders.

Ordinary charcoal is unsuitable for gunpowder, and at present dogwood, alder, or willow is cut in spring, stored $\frac{1}{2}$ to 3 years, then cut into pieces about an inch thick, packed into iron cylinders having holes at one end through which volatile constituents escape, and heated in a furnace for four hours. Air is excluded from the charcoal by allowing the cylinder to cool in a larger closed tank. Military gunpowder generally approximates



Elizabeth Gunning, Duchess of
Hamilton and of Argyll
from a print in the British Museum



Gunpowder. Vertical section of edge-runner mill for the incorporation of gunpowder. A A, rollers mounted on axles E E. B, pan in which the gunpowder is ground and mixed. C, vertical shaft revolved by bevel gearing F. D, cross frame fixed to C, from which are hung the roller axles E E.

to: saltpetre, 75 p.c.; charcoal, 15 p.c.; and sulphur, 10 p.c.; but for blasting the variations of composition are considerable. The ingredients are separately weighed out and roughly ground. It is usual to add some of the saltpetre to the sulphur to prevent the latter

ranged so that an explosion in any mill results in all being flooded. The caked powder is next broken up, the fragments arranged in layers

becoming electrified and igniting, the remainder being ground with the charcoal to prevent clogging.

After preliminary mixing by hand or in rotating drums, the ingredients are incorporated. The rollers are suspended so that they cannot approach within $\frac{1}{2}$ inch of the bed, minimising the risk of friction on a thin layer of powder. Ploughs constantly push the mass under the rollers, resulting in very thorough grinding and mixing of the ingredients, which are moistened with water, 80 lb. being milled at a time for 3 to 8 hours, lengthy incorporation yielding a faster burning powder. One shaft drives six mills, which are separated by strong walls, water tanks being ar-

between plates and pressed to a high density.

The mass is broken down by passing between toothed bronze rollers, and automatic sieves grade the powder as to size, large fragments being recrushed and dust rejected. Gunpowder has been largely displaced as a sporting and military propellant by smokeless powder (*q.v.*), but finds considerable use for blasting, in certain types of shell and cheap sporting cartridges, and as an igniter for smokeless powder in cannon. See Explosives.

Gunpowder Plot. Plot to blow up the Houses of Parliament on Nov. 5, 1605, on which day Parliament was to be opened by King James I. A search under the buildings was made, and Guy Fawkes, one of the conspirators, was found there. The ceremony of searching the vaults of Parliament at its annual opening is a legacy of the Gunpowder Plot. See Fawkes, Guy.

Bibliography. What was the Gunpowder Plot? The Gunpowder Plot and the Gunpowder Plotters, J. Gerard, 1897; What Gunpowder Plot Was, S. R. Gardiner, 1897; The Gunpowder Plot, M. W. Jones, 1909.

Gun-room. Room in warships so called because it was formerly situated at the end of the gun-deck. It was used in large ships by the gunner, in small ones by the lieutenants as a common living-room. The modern gun-room is a mess shared by sub-lieutenants, engineer sub-lieutenants, officers



Gunpowder Plot. An old print depicting the execution of the conspirators. Top, right, contemporary print of the conspirators: left to right, Bates, Robert Winter, Chris. Wright, John Wright, Percy, Guy Fawkes, Catesby, Thos. Winter

of the accountant branch, junior to assistant paymasters of four years' seniority, and midshipmen. See Battleship.

Gun Running. Term applied to the smuggling of arms into places where their importation is forbidden or strictly controlled, especially for political purposes. Governments which have reason to fear the armed resistance of subject races have to keep a close look-out for gun running, which is often a lucrative undertaking for unscrupulous traders; *e.g.* in the Persian Gulf, the Malay Archipelago, and formerly in the W. Mediterranean in connexion with the Carlist intrigues in Spain.

Gun running has been actively carried on in Ireland, occasions being the Ulstermen's feat in Belfast Lough in April, 1914, and that of the Nationalist volunteers at Howth in July, 1914. See Dhow.

Gunter, ARCHIBALD CLAVERING (1847-1907). Author and playwright. Born at Liverpool, Oct.



Archibald C. Gunter,
Anglo-American
author

25, 1847, at an early age he went with his parents to California. Having been a civil engineer on the Central Pacific Rly. and a stock-broker, he went to New York in

1879, and took to writing novels and plays. He wrote 29 novels. His first, *Mr. Barnes of New York*, 1887, was printed at his own expense, and circulated by a news company. Over a million copies of it were sold before the author's death, and he successfully dramatised it and its successor, *Mr. Potter of Texas*, 1888. Its success and that of Gunter's other books was due to his insistence on plot, movement, and incident, avoidance of the past tense, and the creation of the illusion that the author himself did not know what was coming. In 1905 he edited *Gunter's Magazine*. He died in New York, Feb. 23, 1907.

Gunter, EDMUND (1581-1626). English mathematician. Educated at Westminster School and Christ Church, Oxford, he was ordained, and in 1615 was appointed vicar of S. George's, Southwark. His interests, however, were scientific, and in 1619 he was made professor of astronomy at Gresham College, London. He died Dec. 10, 1626. Gunter made some useful mathematical discoveries, while several inventions still bear his name.

Gunter's Chain. Chain used in surveying. Its introduction was due to Edmund Gunter. It is 22 yds. long, divided into 100 links, and it allows of easy calculations of measurements, since an acre contains 10 sq. chains, or 100,000 sq. links. See Surveying.

Guntur. Town of Madras, India, in the Kistna district. It stands on the Grand Trunk Road, 47 m. W.N.W. of Masulipatam. It was given to the French in 1753 by Muzaffar Jang, and became British in 1778. There is trade in cotton and cereals. Pop. about 25,000.

Gupta. Name given to an empire that flourished in India from between 300 and 500 A.D. It was founded by a certain Chandra-

gupta and enlarged by his successor Samudragupta. The real Gupta empire was in northern India, where was its capital Pataliputra, but Samudragupta conquered almost the whole of the peninsula. After 450 it was attacked by the Huns, and when Skandagupta died, about 480, it came to an end, although princes of the family ruled, under the overlordship of others, for some 350 years longer over a smaller area, known as Magadha. The Gupta era, which was long used in Indian chronology, dated from Feb. 26, 320. In the latter part of the 19th century the discovery of Gupta inscriptions added to our knowledge of this empire. See India: History; consult Gupta Inscriptions, J. F. Fleet, 1888.

Gupta, SIR KRISHNA GOVINDA (b. 1851). Indian civil servant. Born at Bhatpara, Dacca, Feb. 28,

1851, he joined the Indian civil service in 1873, becoming secretary to the board of revenue, 1887, commissioner of excise, 1893, and divisional commissioner, 1901. He was appointed a member of the board of revenue in 1904, being the first Indian to hold such a post. He was one of the two Indians who were for the first time nominated to the council of India, and held that post from 1908-15. He retired from the India office in March, 1915. He was created K.C.S.I. in 1911.

Gurdáspur. District, subdivision, and town in the Lahore division of the Punjab, India. The district is bounded on the E. by the river Beas, while the Ravi, which has many tributaries within the district, crosses the N.W. It is irrigated by the Upper Bari Doab Canal and two-thirds of its area is cultivated. The rainfall is good and the crops are usually certain, no part of the Punjab being more fertile. Wheat and sugar-canes are the main crops, while pulses and rice are also grown. The sanatorium of Dalhousie is in the N.E., 7,687 ft. in elevation, and is a pretty and healthy place, reached by tonga from Pathankot, 51 m. away. The town of Gurdáspur lies in the middle of the district, and is on the rly. from Amritsar to Pathankot, exporting sugar and food grains to the former town. District: 1,889 sq. m., pop. 836,771. Subdivision: area 496 sq. m., pop. 224,515. Town: pop. 6,248.



Sir Krishna Gupta,
Indian civil servant
Elliot & Fry

Gurgaon. District, subdivision, and town of the Ambala division of the Punjab, India. The district lies between the Delhi district and Rajputana, and is bounded on the E. by the river Jumna. Close to the river the plain is irrigated by the Agra-Delhi Canal; here the Jats are good cultivators. Elsewhere the soil is sandy and the low hills are bare. Owing to the unreliable rainfall crops fail frequently. It is crossed by two main rlys. Rewari is the most important town. Gurgaon town stands on the Rajputana state rly., 20 m. S.W. of Delhi, in a fertile plantation, and is the administrative headquarters. District: area 1,984 sq. m., pop. 643,177. Subdivision: area 411 sq. m., pop. 112,312. Town: pop. 5,461.

Guriev. River port of S. Russia, in Uralsk. It stands on the Ural, 10 m. from where it runs into the Caspian Sea, and not far from the boundary between Europe and Asia. The chief occupation is fishing. Pop. 9,500.

Gurjun Balsam or **WOOD OIL.** An oleo-resin prepared from several species of *Dipterocarpus*, chiefly *D. turbinatus*, in India, Burma, and the Malacca States. The distilled oil is used in the place of balsam of copaiba in cases of leprosy. It is also used as a protection against the attacks of white ants, and as a varnish.

Gurkha. Name usually applied by Europeans to those tribes in Nepal whence the British Gurkha regiments are recruited. Of the total Nepalese population, numbering (1911) 5,639,092, the chief tribes are the Kha, Mangar, and Gurung. Their Mongoloid strain and primitive animism have been much Aryanised; the Sanskrit-speaking Kha and the Mangar profess Hinduism, the Gurung a lax Buddhism.

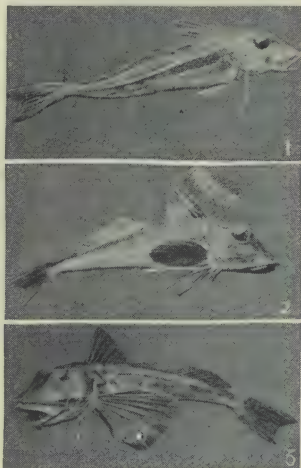
The Gurkhas, who form part of the Indian army, aided by their loose observance of caste rules, fraternise freely, especially with Highland regiments. Their characteristic weapon, the kukri, is a curved knife. Faithful, fearless, self-reliant, they rendered valuable



Sergeant of Gurkha regiment

service during the Great War, both in France and on other fronts. The Nepal government placed 10,000 at the disposal of India for combatant service, and throughout the period of hostilities 55,000 recruits were received by the Gurkha battalions of the Indian army. *Pron.* Goorka.

Gurnard (*Trigla*). Fish of a genus which includes about 40 species. Gurnards are distinguished



Gurnard. 1. Grey gurnard, *Trigla gurnardus*. 2. Red, *T. cuculus*. 3. Sapphire, *T. hirundo*

by their large, ugly heads, which are covered with angular plates. The three front rays of each pectoral fin are modified into feelers, somewhat resembling fingers, which are used not only in finding prey, but in creeping on the sea bottom. Most gurnards make good table fish.

Seven species of gurnards are found around the British coasts, the red gurnard (*T. cuculus*) being most frequently seen in the markets. It is bright red in colour, tinged in parts with silvery white, and the pink colour of its flesh is attributed to its feeding upon crustaceans. The grey gurnard (*T. gurnardus*) is also common, and is larger in size, being less esteemed for the table. The sapphire gurnard (*T. hirundo*) is often 2 ft. in length, and is brown with beautiful blue pectoral fins. The piper (*T. lyra*) is a large red species with prominent snout and formidable spines. The gurnard makes a grunting noise when first captured, whence the name (*Fr. grogner*, to grunt).

Gurney. Name of an English family, known for its association with banking and Quakerism. Hugh le Gourney, or Gurney, obtained land in Norfolk soon after the Norman Conquest, and there

his descendants lived for centuries. In the 17th century some joined the Society of Friends. John Gurney (1688-1741), prominent as a merchant in Norwich and as a Friend, was the father of John and Henry Gurney, who, in 1770, set up a bank in Norwich. This became the firm of Gurney & Co., of which, towards the end of the century, another John Gurney, a descendant of Joseph Gurney, became the head. John was the father of Elizabeth Fry and Samuel, Joseph John, and Daniel Gurney.

Joseph John and Daniel entered the Norwich business, but their brother, Samuel (1786-1856), also a philanthropist interested in humanitarian and religious movements, went to London and served in the business of his brother-in-law, Joseph Fry. In 1807 he became a partner in the firm of Richardson, Overend & Co., which under him became known as Overend, Gurney & Co. His sons carried on his business until 1865, when it was made into a joint stock company. In 1866 it failed with liabilities of over £11,000,000, many other firms being involved. The Norwich bank, however, continued to flourish until it was absorbed by Barclay's in 1896. Earlham Hall, near Norwich, was long the family residence. *See* The Gurneys of Earlham, Augustus Hare, 1895.

Gurney. Name of a family of shorthand writers. Thomas Gurney (1705-1770) was born at Woburn, March 7, 1705, his father being a miller. He himself became a clockmaker and then a schoolmaster, at the same time learning shorthand. About 1740, having settled in London, he was made the official shorthand writer at the Old Bailey, the first appointment of its kind. He was shorthand writer in other courts of justice and in the House of Commons. He died June 22, 1770. His system was published as Brachygraphy.

His son Joseph (1744-1815) succeeded to the positions. He published reports of state trials and also further editions of the Brachygraphy. The business of shorthand writer was carried on by Joseph's son, William Brodie Gurney (1777-1855), and then by the latter's son, Joseph Gurney (1804-79). William was a philanthropist and a prominent figure among the Nonconformists of his day. In 1813 he was recognized as the official shorthand writer to the two Houses of Parliament. His son Joseph was the official shorthand writer from the time of his father's resignation in 1849 until his own in 1872, when the office passed to a nephew, W. H. Gurney

Salter. Joseph Gurney died Aug. 12, 1879. *See* A Text Book of the Gurney System of Shorthand, W. H. Gurney Salter, 1884.

Gurney, EDMUND (1847-88). British psychological writer. Born at Hersham, Surrey, March 23, 1847, he was educated at Trinity College, Cambridge. Much interested in psychical subjects, he was one of the founders of the Society for Psychical Research, whose object was to investigate the claims of spiritualism. Gurney himself chiefly devoted his attention to telepathy, hallucination, and hypnotism. He died June 23, 1888.

Gurney, HENRY PALIN (1847-1904). British scientist. Born in London, Sept. 7, 1847, he was educated at the City of London School and Clare College, Cambridge, of which he became lecturer in mathematics and natural science, and senior fellow. In 1871 he was ordained, and long served S. Peter's, Bayswater, as curate. In 1872 he began to lecture for Walter Wren (*q.v.*), and in 1877 became managing partner of the tutorial firm of Wren and Gurney. In 1894 Gurney was appointed principal of the Durham College of Science, Newcastle-upon-Tyne. A noted athlete, he lost his life in Switzerland, Aug. 13, 1904, the result of a fall.

Gurney, JOSEPH JOHN (1788-1847). British philanthropist. Born Aug. 2, 1788, a son of John Gurney of Earlham Hall, Norfolk, he studied at Oxford, though not in the university, and soon began to write. He became a partner in the bank of Gurney & Co., Nor-



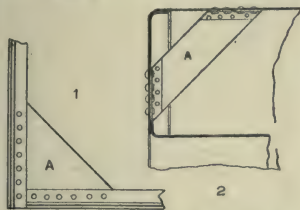
Joseph John Gurney, British philanthropist

wich, but his real work was done as a minister of the Society of Friends, and as an advocate of the abolition of slavery, of prison reform, and other causes of the kind. To promote these he travelled in America and elsewhere. He died Jan. 4, 1847. *See* Memoir, ed. J. B. Braithwaite, 1854.

Gurupy. River of N. Brazil. Rising on the N. slope of the Serra de Cintá, it flows N.E. and N. to discharge its waters into the Atlantic N. of the towns of Gurupy and Visco, through the Bay of Gurupy. Its length is estimated at 250 m.

Gusher (Icelandic *geyser*, to gush). Literally anything that rushes out violently as water from a geyser. It is used now for a well of oil that does not need pumping. *See* Oil.

Gusset. Flat plate used for riveting or bolting together two or more parts of a metal frame, e.g.



Gusset. Examples of gussets, A, 1, a lattice girder; 2, Lancashire steam boiler

for riveting together a bridge girder boom and its web bracing members. It is also a plate connecting two parts of a structure with the object of providing additional rigidity, e.g. connecting the trough flooring of a bridge to the main girders. See Bridge.

Gustavus I, called VASA (1496–1560). King of Sweden 1523–60 and founder of the Vasa dynasty.



Gustavus I, King of Sweden
From a print

His real name was Gustav Eriksson, his familiar surname, which he himself never employed, being derived from the fascine resembling a vase in his family arms.

Born at Lindholmen, Upland, May 12, 1496, son of a Swedish noble, Erik Johansson, he was educated at Upsala, and early joined the army. In 1518 he carried the Swedish standard at the battle of Brännkyrka, when his cousin, Sten Sture, defeated the Danes. He was carried off by the Danes and imprisoned, but escaped. After many adventures, he got back to Sweden.

After the Blood Bath of Stockholm, 1520, in which his father was one of the victims, Gustavus succeeded in rousing the people to revolt, and drove out the Danes. In 1523 he was proclaimed king by the Swedish diet, captured Stockholm, and was crowned, thus bringing to an end the somewhat turbulent union of Scandinavia. In 1524 he effected a treaty of peace with Denmark. An encourager of Lutheranism, in 1527 he definitely broke with Rome and established the reformed religion in his dominions. He encouraged trade and commerce and the establishing of schools and laid the foundations of a navy. In 1544 the crown was made hereditary in his family. He died Sept. 29, 1560, and was buried in the cathedral of Upsala.

Gustavus II OR GUSTAVUS ADOLPHUS (1594–1632). King of Sweden. Born at Stockholm, Dec. 9, 1594, he was the son of Charles IX and the grandson of Gustavus Vasa. He was well educated, and is said to have been familiar with five languages when only a boy, while



Gustavus Adolphus
After Van Dyck

he was also trained in the art of government. His father made him his assistant, and as duke of Vestmanland he had some authority of his own.

Gustavus succeeded his father on the throne in 1611, holding it against the claims of Sigismund of Poland, who was of a rival and older branch of the family. Between 1611 and 1630 he reorganized the government, waged successful wars with Denmark and Russia for the recovery of Swedish provinces on the Baltic, and then dealt in like manner with Poland. His disciplined troops became the best instrument of war in Europe, and he himself the greatest living master of the art of war. Meanwhile the Thirty Years' War had broken out in Germany and the Catholic and Imperial party had established their ascendancy.

At this point Gustavus intervened as the champion of the Protestant cause. He landed in Pomerania in 1630, and having frightened or persuaded Brandenburg and Saxony into active co-operation, opened those brilliant campaigns which triumphantly swept back the Catholic tide and established his own position among the greatest captains of history. His victory at Breitenfeld, Sept. 17, 1631, and his triumphal march through western and southern Germany amazed all Europe. His character as well as his talents raised him to heroic rank, but he fell in the hour of victory at the battle of Lützen, Nov. 16, 1632. Gustavus married Marie Eleonora, a member of the Hohenzollern family, and had one daughter, his successor, Christina. See Thirty Years' War; consult History of Gustavus Adolphus, J. L. Stevens, 1885; Gustavus Adolphus and the Struggle of Protestantism for Existence, C. R. L. Fletcher, 1890.

Gustavus III (1746–92). King of Sweden 1771–92. Born at Stockholm, Jan. 24, 1746, he was the first ruler of the native-born Holstein-Gottorp line. He was in

Paris, when the death of his father, Adolphus Frederick, recalled him to Sweden. In the following year, by means of a feigned revolt, he effected a *coup d'état* against the powerful nobles.



Gustavus III, King of Sweden

Gustavus was so devoted to all things French that he sought to copy the luxury of Versailles, and increased taxation as to alienate his people. In 1788 he was personally responsible for an ineffective war with Russia. A conspiracy of nobles was formed against him, and he was shot in Stockholm, and died thirteen days later, March 29, 1792. See Gustavus III and His Contemporaries, R. N. Bain, 1894.

Gustavus IV (1778–1837). King of Sweden 1792–1809. He was born at Stockholm, Nov. 1, 1778, the son of



Gustavus IV, King of Sweden

Gustavus III. For the first five years of his reign the kingdom was under the regency of his uncle. He allied himself with England, lost Finland to the Russians, and Stralsund and Rügen to

the French. In 1809 his army and nobles combined to dethrone him, and he died Feb. 7, 1837, at St. Gall, Switzerland. See his Autobiography (in German), 1829; An Exiled King, S. Elkan, 1913.

Gustavus V (b. 1858). King of Sweden. Born at Drottningholm, June 16, 1858, a son of Oscar II, he

studied at Upsala, and entered the Swedish army in 1875. During 1878–79 he travelled much over Europe, and in 1881 married Victoria, daughter of the grand duke of Baden. In 1907 he succeeded to the throne. When the Great War broke out in 1914, Gustavus, unlike his ministers, favoured a militant policy; but his country maintained its neutrality.



Gustavus V, King of Sweden

Guströw. Town of Germany, in Mecklenburg-Schwerin. It stands on the Nebel river, 23 m. by

ry. S. of Rostock. It has a 13th century cathedral (restored 1868); a 16th century town hall, a Renaissance castle, now utilised as a workhouse; and a fine old parish church with paintings and carvings.

A busy industrial centre, holding an annual wool fair, it manufactures iron goods, bricks, sugar, glue, tobacco, alcoholic liquors, dyes, soap, and wire rope. There are also motor-car works and machine shops, tanneries, saw mills, and a brisk trade in dairy produce. During the Great War it became an internment camp. Pop. 17,805.

Gut. Intestines of animals, which when removed and prepared are used for various commercial purposes. The entrails from freshly-killed sheep or other animals are removed, thoroughly washed, trimmed, and scraped free of the softer surface layers. The gut is then sold for sausage coverings, being preserved in salt until required. The process of gut-spinning is employed where the gut is to be made into fiddle strings or cords for rackets, etc. The various lengths of scraped gut are sewn together, and the gut twisted on a spinning wheel. The spun gut is then dried in the open air. Silkworm gut as used for fishing tackle is made from silkworms.

Gutchkov, ALEXANDER IVANOVITCH (b. 1853). Russian statesman. Born and educated in Mos-



Alexander Gutchkov,
Russian statesman

cow, he entered on a business career, and early interested himself in public affairs. He served as a volunteer with the Boers in the S. African War, and in the Russo-Japanese War,

and with the Bulgarians in the Balkans. In 1905 he became one of the founders and soon the leader of the Octobrist Party (*q.v.*). He entered the Duma in 1907, and was made president, proving himself a firm constitutionalist of the moderate school. He failed to secure a seat in the Fourth Duma, but was elected member of the Council of the Empire.

During the Great War he directed Red Cross work at the front, and later acted as chairman of the central industrial munitions committee. In March, 1917, after the outbreak of the Revolution, he was appointed minister of war and marine in the first Russian national cabinet, but resigned in May, owing to the difficulty of exercising his authority. He was

arrested in Sept., but was soon released. See Russia.

Gutenberg OR GENSFLEISCH, JOHANN (c. 1400—c. 1468). German inventor of printing from movable

The true Effigies of Iohn Gutenberg Delineated from the Original Painting at Mentz in Germany.



Johann Gutenberg, the German inventor of movable type printing

From an old engraving

types. Born at Mainz, he lived between 1420 and 1426 at Strasbourg, where he is believed to have perfected his invention. He returned, about 1444, to Mainz, where he was assisted financially by a partnership with Johann Fust, a goldsmith, who foreclosed on a mortgage; and technically by Fust's son-in-law, Peter Schöffer, an engraver, who is credited with the invention of punches and matrices. He died at Mainz.

An astronomical calendar, a fragment of which was discovered in 1901, a Latin Bible, and a Latin dictionary, approximately dated 1447, 1458, and 1460 respectively, and two or three other works, are attributed to Gutenberg alone, but no book bears his name. A Gutenberg museum was founded in 1901 at Mainz, where a statue was erected in 1837, and where festivals were held in 1837, 1840, and 1900. See Coster, L. J.; Typography.

Gütersloh. Town of Germany. It is in Westphalia, 11 m. S.W. of Bielefeld. It has textile, brewing and other industries, and an extensive trade in Westphalian ham and sausage. The local rye-bread, *pumpernickel*, is famous for its nutritive value. During the Great War an internment camp was established here. Pop. 18,336.

Guthrie Castle, the old residence of the Guthrie family. It is 8 m. from Arbroath, and was restored in the 19th century. Massive walls of the original 15th century building still stand.

Guthrie. City of Oklahoma, U.S.A., the co. seat of Logan co. It stands on the Cottonwood and Cimarron rivers, 30 m. N. of Oklahoma City, and is served by the Atchison, Topeka and Santa Fé, and other rlys. Notable buildings include the federal building, the city hall, a county courthouse, a Carnegie library, and the Scottish Rite Temple. Guthrie has cotton and flour mills, foundries and machine shops, and lumber, cigar and furniture factories. Its mineral springs attract many visitors. Founded in 1889, the year Oklahoma was thrown open to white settlement, Guthrie was the capital of the territory from 1890 until 1907, and in that year, when Oklahoma became a state, it was constituted the capital, but was superseded by Oklahoma City in 1911. Pop. 12,098.

Guthrie, SIR JAMES (b. 1859). Scottish painter. Born at Greenock, June 10, 1859, he was educated at the university of Glasgow, and studied art in London and Paris. He became prominently identified with the Glasgow school (*q.v.*), though his work is more cosmopolitan than Scottish, and, in its later aspect, is akin in style to that of Sargent.

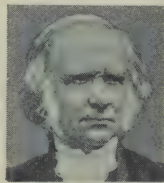


Sir James Guthrie,
Scottish painter

Russell

Elected A.R.S.A. in 1888, and R.S.A. four years afterwards, he was chosen president of the Scottish Academy in 1902, in succession to Sir George Reid. His finest pictures include Funeral Service in the Highlands, 1882; To Pastures New, 1883; and Schoolmates, 1886, in the Ghent Municipal Gallery; while of his many portraits, those of Lady Stirling-Maxwell, Professor Jack, and the Rev. Principal Alexander Whyte, may be mentioned.

Guthrie, THOMAS (1803-73). Scottish divine. Born at Brechin, Forfarshire, July 12, 1803, he was



Thomas Guthrie,
Scottish divine

educated at Edinburgh and Paris, and, after being manager of his father's bank, 1827-29, became minister of Arbirlot, near Arbroath, 1830; of Old Greyfriars, 1837; of S. John's, Edinburgh, 1840-43; and,

after the disruption, of Free S. John's, 1843-64. A powerful preacher, he took a leading part in the promotion of a national system of education, of ragged schools, temperance, and social work among the poor. In 11 months, 1845-46, he raised £116,000 for Free Church manse.

He was moderator of the Free Church General Assembly, 1862, the first editor of *The Sunday Magazine*, 1864-73, and F.R.S. Edin. He died at St. Leonards, Feb. 24, 1873. A voluminous writer, many of whose works had a wide circulation in the U.S.A., he wrote *Pleas for Ragged Schools*, 1847-62; *A Plea for Drunkards*, 1850; *The Gospel in Ezekiel*, 1856; *The City, its Sins and Sorrows*, 1857; *The Way to Life*, 1862. His son, Charles John, Lord Guthrie (1849-1920) was a judge of the Court of Session. See *Autobiography and Memoir*, D. K. and C. J. Guthrie, 1874-75.

Guthrie, THOMAS ANSTEY. English novelist and playwright who wrote under the pen-name of F. Anstey (*q.v.*).

Guthrum (d. 890). Danish king of E. Anglia. He gained a victory over Ethelred and his brother Alfred at Reading in 871, and after Ethelred's death marched with two other kings to Cambridge in 875, occupied Wareham in 876, and in 877 was bought off by a treaty. In 878 he was defeated by Alfred at Ethandune (Edington), Wilts, and surrendered in his camp at Chippenham. By the peace of Wedmore he agreed to become a Christian, to give hostages, and to leave Wessex to Alfred. He was baptized under the name of Athelstan, Alfred standing godfather. In 885 he failed to renew his hostages and permitted an attack on Wessex, but was defeated and concluded the treaty known as Alfred and Guthrum's peace. See *Wedmore, Treaty of*.

Gutierrez, JUAN MARIA (1809-78). Argentine poet and writer. Born at Buenos Aires, he was for some time an exile in Chile, but after the downfall of the dictator Rosas he returned and became rector of the university in his native place, where he died Feb. 26, 1878. An ardent patriot, his hatred of Spanish rule is exemplified in his ode *To the May Revolution*, 1841, and in *This Year and That*. He is at his best in his shorter poems, which are distinguished by correct and elegant style. He was the author of a *South American anthology—America Poetica*. His writings exercised great influence throughout the S. American continent.

Gutta-percha. Substance resembling rubber, prepared from the juice of various trees of the genus *Palaquium*, natives of the Malay Archipelago. The tree has also been introduced into Java. Incisions are made in the bark of the tree, which causes the juice to exude. It quickly coagulates and is scraped off with a knife. Frequently the tree is felled in order to collect the gutta-percha, but the modern method is to tap the standing trees.

Although resembling rubber closely, gutta-percha is less elastic, becomes plastic at the temperature of boiling water, and cannot be vulcanised like rubber. Owing to its special electrical properties, gutta-percha is employed as an insulator for submarine cables. It is also used for covering golf balls, and for many purposes for which rubber is also adapted. See *Rubber*.

Gutter (Lat. *gutta*, drop). Term used in several connexions. In iron and steel smelting, a gutter is a channel through which the molten lead flows from the furnace. In printing, it is the blank space between adjoining pages in a forme of type. In building, and in draining and roadmaking, it is a channel used to carry off water.

Roof gutters may be situated wherever desirable, e.g. under the parapets formed by party walls, or down the internal angles or "valleys" formed by intersecting roofs, or in convenient positions on flat roofs. Except at the eaves, roof gutters are usually flat and narrow waterways, but the most familiar form is the eaves gutter, most commonly of the shape called half-round, which is fixed at the lowest part or eaves of the roof, and conducts the water through down-pipes to a drain, rainwater butt, or perhaps to a paved footpath. From there it can easily escape to the road-channel or gutter.

The eaves gutter, when fed by other gutters, is a main gutter. Eaves gutters are of various materials—copper, lead, cast-iron, zinc—and are formed and fixed in various ways. A simple form is the half-round metal gutter suspended beneath the eaves by malleable iron hangers, of which one end is screwed on to the roof boards, the other being attached to the middle of a bridging piece which clips the edges of the gutter. More commonly the eaves gutter rests on a board supported on brackets or corbels, or on a ledge formed in a parapet wall which conceals it; or the gutter may be moulded to form part of a cornice.



Gutta-percha. Leaves and flowers of *Palaquium gutta*

For flat roofs a gutter having vertical sides is preferable; while for sloping roofs gutters having sloping sides—such as the V-gutter—are most usual; or one side may be sloping and the other upright, as in the "parapet gutter." Gutters should incline towards their outlets in a ratio of not less than 1 in 10, and in some instances 2 or 3 in 10 is desirable. Sunk or enclosed gutters are usually 8 ins. or 10 ins. wide. Cornice and parapet gutters are commonly of wood, covered with lead or zinc.

Drips in roof gutters are falls arranged at intervals of 12 ft. or so in the line of the gutter to facilitate the flow. Snow-boards, to prevent snow choking the gutters or sliding off the roof in heavy masses, are commonly formed of creosoted yellow deal battens laid transversely over the gutter about an inch or so apart. Another form of guard consists of angle-irons raised perpendicularly along and above the gutter and supporting transversely three or four rows of teak boards running parallel to the gutter.

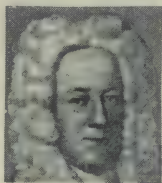
Road guttering is called also channelling, and town roads are usually specified to be kerbed and channelled, the channels being obviously incomplete without kerbs to prevent water running over the footpath or gradually sapping it. Channels are usually formed of small oblong blocks of stone (granite, syenite, Kentish rag) laid on a concrete bed forming a water-table not less than 15 ins. wide, and laid lengthwise to the direction of the road which is cambered or sloped from its middle to its sides, the channels conforming to this slope. See *Building*; *House*.

Guttiferae. Natural order of trees and shrubs, natives of humid regions in S. America, India, and Africa. They have undivided, leathery, opposite leaves, and white, yellow or pink flowers, often imperfect. They exude a yellow gum-resin, that obtained from *Garcinia cambogia* and other species forming the gamboge of commerce. Mangosteen is the fruit of *G. mangostana*; and the mammee-apple that of *Mammea americana*.

Gutzkow, KARL FERDINAND (1811-78). German dramatist and novelist. Born in Berlin, March 17, 1811, after studying at several universities, in 1835 he published *Wally, die Zweiflerin* (Wally, the Sceptic), which so offended the authorities that he was sentenced to three months' imprisonment. He became also one of the "Young Germany" writers, publication of whose future work was forbidden by a special edict of the Federal Diet. In 1847, however, he was appointed dramatic adviser to the Dresden court theatre. He had already won distinction on the stage with his *Richard Savage*, 1839; *Zopf und Schwert* (The Queue and the Sword), 1844, and other plays. He died at Frankfurt-on-Main, Dec. 16, 1878.

Guy (Span. *guia*, guide). Term for a rope of hemp or steel wire used for steadying an object which is being lifted or moved; or for temporarily arresting or preventing the motion of an object; or for temporarily securing and stiffening a portion of an incomplete structure. Such a rope, if used for a permanent purpose, is called a stay.

Guy, THOMAS (c. 1645-1724). English bookseller, printer, and founder of Guy's Hospital, London. Born in Horselydown, Southwark, and educated at Tamworth, he was apprenticed to a London bookseller, 1660-68. Becoming a freeman of the Stationers' Company, he set up in business for himself at the corner of Lombard Street and Cornhill, made a feature of cheap Bibles, and became a printer to Oxford University, 1679-92. He was M.P. for Tamworth, 1695-1707. He lived sparsely, acquiring a large fortune, partly amassed by buying and selling at a profit shares in South Sea stock, and is best remembered by his benefactions to trade charities and his general philanthropy.



Thomas Guy, founder of Guy's Hospital

He founded almshouses and built the town hall at Tamworth; became a governor of S. Thomas's Hospital, for which he built and furnished three wards; spent £18,793 in founding in Southwark the hospital known by his name, and left £200,000 for its endowment. He also gave £400 a year to Christ's Hospital. Many of his benefactions were only made known after his death, Dec. 27, 1724. See Biog. History of Guy's Hospital, G. T. Bettany and S. Wilks, 1893.

Guyas. Maritime prov. of S.W. Ecuador, S. America. Area 11,500 sq. m. Traversed by the river Guyas, it is low lying and fertile, producing cocoa, coffee, sugar, rice and tobacco. The river rises in the Andes, and flows S.W. into the gulf of Guayaquil. It is navigable for light craft as far as Bodegas. The capital is Guayaquil (q.v.). Pop. 150,000.

Guy de Lusignan (d. 1195). French crusader and king of Jerusalem and Cyprus. Younger son of Hugh the Brown of Lusignan, of a great French feudal family, he married in 1180 Sybilla, daughter of the king of Jerusalem and received the title of count of Jaffa and Ascalon. On the death of Baldwin V, Guy became king of Jerusalem, 1186. He was captured at Tiberias by Saladin, 1187, but set free on condition that he ceased to fight against Islam, which promise he soon afterwards broke.

His title to the throne was challenged by Henry of Champagne who was called to the throne by election in 1192, whereupon Guy purchased Cyprus from the Knights Templars, and established a new principality on the island. His brother, Amalric, succeeded him on his death in 1195, became king of Jerusalem, 1197, and founded the Lusignan kings of Cyprus.

Guy Mannering; OR, THE ASTROLOGER Second novel of Sir Walter Scott. Written in six weeks, founded on old Galloway and Ayrshire traditions, and published in Feb., 1815, it formed a notable departure from its predecessor, Waverley. Its descriptions of coast scenery are a prominent feature; the chief characters include the partly autobiographical Colonel Mannering; Dominie Sampson, whose exclamation "Prodigious!" has become proverbial; Dandie Dinmont, the Liddesdale farmer; Meg Merrilies; Gilbert Glossin, the wily attorney, and his smuggler accomplice Dirk Hatteraick. The work was dramatised by Daniel Terry with the aid of the author, whose assistance almost betrayed the secret of the novel's authorship.

Guynemer, GEORGES (1894-1917). French aviator. He obtained his pilot's certificate April, 1915,



Georges Guynemer, French aviator

and quickly rose from private to lieutenant, becoming one of the best-known French aviators on the west front. Promoted to captain in Feb., 1917, after he had brought down over thirty German aeroplanes, by the beginning of Sept. he had fifty victories to his credit, and became the champion "ace" of the French air force.

His greatest feat was on May 25, 1917, when he brought down two German aeroplanes in one minute and two more later on in the same day. He was killed on Sept. 11, 1917, after he had brought down his fifty-third enemy aeroplane, by being shot in the head by the German aviator Wissemann, after a thrilling fight. Guynemer was twenty times mentioned in dispatches, was twice wounded, and received the Military Medal, the Military Cross, and the rosette of Officer of the Legion of Honour. The French Chamber in Oct., 1917, decided to place his name on the commemorative tablets of the Panthéon until his body could be found and buried in that hall.

Guy of Warwick. Mythical hero of an Anglo-Norman metrical romance. Sir Guy, son of a steward of the earl of Warwick, to gain the hand of the earl's daughter Felice or Phillis, goes through knightly adventures at home and abroad, is then married, but, in remorse for the blood he has shed, becomes a pilgrim to the Holy Land. He returns, and, after killing the Danish giant, Colbran, in a duel to decide the issue between Athelstan and the Danes, retires unknown to a hermitage at Guy's Cliffe (q.v.), near Warwick, and only reveals himself to his wife Felice by sending her a ring when he is on the point of death. The poem, of great length, and supposed to have been written about the 13th century, in couplets and romance stanzas, was once enormously popular. A MS. copy is at Caius College, Cambridge; there are fragments in the Auchinleck MSS. at Edinburgh, and the text was edited by J. Zupitza, 1883-87.

Guyon, MADAME (1648-1717). French mystical writer whose maiden name was Jeanne Marie Bouvier de la Motte. Born at Montargis, April 13, 1648, she

early came under the influence of Father Lacombe, a prominent Quietist teacher.



Madame Guyon,
French Quietist

From a print

though she had the support of Fénelon. She taught that the essence of religion consisted in the passive contemplation of God, and that good deeds were of less moment. She died at Blois, June 9, 1717. See *Mysticism*; consult also *Poems*, 1902; *A Method of Prayer*, 1904, ed. D. Macfayden.

Guyon, RICHARD DEBAUFE (1803-56). British soldier in Hungarian and Turkish service. Born near Bath, March 31, 1803, he entered the Austrian army, and reached the rank of captain. He retired in 1839, and settled in Pest, but when the Hungarian rising broke out in 1848 he commanded the Hungarian landsturm. After the victory of Schwechat in Oct., he was put in command of a division, and early in the following year was promoted general. He succeeded in raising the siege of Komorn in April, 1849, but when the Hungarians collapsed Guyon escaped with Kossuth to Turkey. Joining the Turkish army in 1852, he fought against the Russians in Anatolia during the war of 1855-56, but died suddenly at Scutari, Oct. 12, 1856.



Richard Guyon,
British soldier

Guyot, YVES (b. 1843). French writer and economist. Born at Dinan, Sept. 6, 1843, he was edu-



Yves Guyot,
French writer

cated at Rennes and became a journalist. In 1868 he was appointed editor of *L'Indépendant du Midi*, but he soon migrated to Paris, where he worked for several papers and took part in public life. As editor of *Le Siècle* between 1892 and 1903 he made himself a force for political and social reform,

especially in his attacks on one aspect of the police system, for which he was imprisoned. In 1885 he was returned to the Chamber of Deputies, and 1889-98 he was minister of public works. In 1909 he was made editor of *Le Journal des Économistes*. In 1920 he attended a congress of free traders in London. His writings include, to give them their English titles, *The Comedy of Protection*; *The Science of Economics*; *Prostitution*; and *The Socialist Tyranny*. *Pron.* Ghee-oh.

Guy's Cliffe. Estate on the bank of the river Avon, 1½ m. from Warwick, now the seat of Lord Algonern Percy. In the grounds are the cave said to have been hewn for himself by Guy of Warwick (*q.v.*) and the chapel of S. Mary Magdalen, founded to his memory by Richard Beauchamp, earl of Warwick (d. 1439), and containing a mutilated statue of the hero. There were hermit residents at Guy's Cliffe in the reigns of Edward III and Henry IV, and another occupant of the hermitage was John Rous the antiquary (d. 1491), who was its chantry priest, officiating daily in the chapel.

Guy's Hospital. London hospital founded by Thomas Guy (*q.v.*) in 1721. It has 647 beds, and departments for providing treatment in all branches of medicine and surgery. The Wills library was built in 1902, the Gordon Museum in 1905. In 1910 new laboratories were built for the study of chemistry and physics. New departments of pathology and pharmacology were established in



Guy's Hospital
arms

1912 and in 1913 respectively. Among its distinguished teachers have been Astley Cooper, Richard Bright, Thomas Addison, and William Gull. Hodgkin was a lecturer, and Keats was at one time a student at the hospital. There is an excellent medical school attached to the hospital.

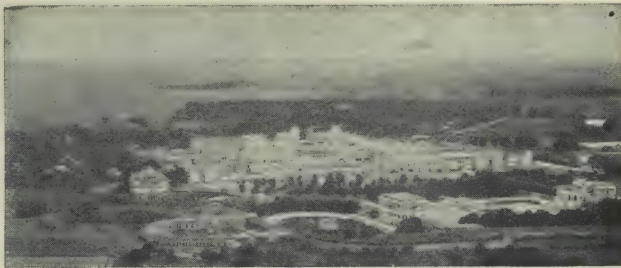
Guzman Blanco, ANTONIO (1823-99). Venezuelan statesman. Born at Caracas, Feb. 29, 1828, he became a lawyer and then a soldier, fighting in the civil disturbances of the time. From 1863-68 he was vice-president of Venezuela, and in 1870, as the result of a revolution,



Guy's Cliffe. Warwickshire seat of Lord Algonern Percy

became dictator of the country. He was deposed in 1889, whilst he was in Europe serving as envoy to the Powers, one reason for his fall being his corrupt methods of making money. On the other hand he did something for the education and the general welfare of his country. Guzman Blanco died in Paris, July 29, 1899.

Gwalior. State of India. In the Central India Agency, its area is 25,133 sq. m. Of the lands under state control about a quarter is under cultivation, a quarter of this being devoted to millet, other important crops being gram and wheat. The forests are extensive and full of wild animals. Minerals include sandstone, limestone, mica, and iron. The chief industry is the manufacture of cotton goods.



Gwalior, India. The palace, Gwalior City, begun in the early 18th century, a magnificent example of Hindu architecture, seen from the fort

Exports mainly consist of agricultural produce. The ruler is a maharaja, entitled to a salute of 21 guns. Pop. 3,102,280, nearly all Hindus.

Gwalior. City of Gwalior state, India. The town occupies the site of the old city of Gwalior, and 2 m. to the S. is the capital of the state, Lashkar. It contains Jain and early Hindu antiquities and the palace of Man Singh. The famous fort of Gwalior stands on an isolated hill above the town, which contains many buildings of historical interest. Pop. 14,700.

Gwelo. Town of Rhodesia, S. Africa. It is 198 m. S.W. of Salisbury and 113 m. N.E. of Bulawayo, with which towns it is connected by rly. It is the centre of a gold-mining district. European pop. 500.

Gwent. Welsh name for Monmouthshire. In 1921 it was proposed to create a new bishopric for the church in Wales and to call this Gwent. See Monmouthshire; Newport; Wales, Church of.

Gwinner, ARTHUR VON (b. 1856). German banker. Born at Frankfurt-on-Main, April 4, 1856, he was the son of a lawyer, Wilhelm von Gwinner, the friend and biographer of Schopenhauer. He entered the public service, and was for a time consul at Madrid, after which, in 1888, he founded in Berlin a banking company, bearing his own name. In 1894 he joined the board of directors of the Deutsche Bank, and in 1901 became its virtual head. He secured the concession for the Bagdad Rly. and became president of the companies formed to construct and work the lines between Constantinople and Bagdad.

Gwyniad. Small fish belonging to the genus *Coregonus*. Found in Lake Bala, it belongs to the salmonoid group, and much resembles a small herring. It is probably only a local race of the powan, common in the Lake District and in Loch Lomond.

Gwynn, GWYN OR GWIN, NELL OR ELEANOR (1650-87). English actress, mistress of Charles II. Born Feb. 2, 1650, either in an alley in Drury Lane or at Hereford, she early attracted notice as an orange-seller at the Theatre Royal, Drury Lane, where in 1665 she made her first stage appearance as Cydaria in Dryden's Indian Emperor. Until 1682, when she left the stage, she played a variety of parts and was specially successful in broad comedy and in daring prologues and epilogues.

She became the king's mistress about 1669, and retained his affection until his death. She died in



Nell Gwynn, actress and favourite of Charles II

After Sir Peter Lely

London of apoplexy, and was buried at St. Martin's-in-the-Fields. Of her two sons by Charles, the elder was created duke of St. Albans in 1684. Her sprightliness and frank good nature and her rivalry with the unpopular duchess of Portsmouth made her a universal favourite. See Charles II; consult also The Story of Nell Gwynn, P. Cunningham, ed. G. Goodwin, 1908; Nell Gwynn, C. Chesterton, 1912.

Gyantse. Town of Tibet, 125 m. N.E. of the Chumbi Valley. It stands, at an alt. of 13,200 ft., at the foot of a jong or fortress which, with a fortified lamasery, occupies two rocky eminences commanding a wide plain. Gyantse was held by the Younghusband Expedition, and opened to foreign trade by the Lhasa Convention, 1904.

Gyaro, GYAROS OR GHIURA. Island of the Aegean Sea. One of the Cyclades, it is a mountainous island, about 10 m. N.W. of the island of Syra. Triangular in shape, its length is 10 m., and greatest breadth about 3 m. In Roman imperial times it was a place of banishment for criminals.

Gybe. Nautical term for the swinging over of the mainsail boom or spanker when the wind is aft. With the wind dead aft and variable there is often a strong tendency of the mainsail to gybe, and if the operation is not carried out carefully the vessel may capsize or the mast or boom be broken.

Gyers' Kiln. Metallurgical furnace used for the calcining of iron ores. Designed by John Gyers, an engineer of Middlesbrough-on-Tees, it consists essentially of an inner lining, about 18 ins. in thickness, of firebrick enclosed in an iron casing. The upper part is cylindrical, 20 ft.

to 35 ft. in diameter, while the lower part is conical, tapering inwards to the bottom. In the centre, on the bottom, is a double cone which assists to spread the ore and fuel evenly in the kiln. Air is introduced through passages in the sides of the tapering part of the kiln and also through the spreader cone. See Furnace; Iron.

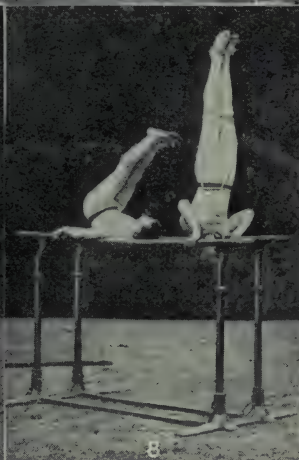
Gyges (7th century B.C.). King of Lydia. As a young man he became a favourite of the reigning Lydian Sadyattes Candaules, but having given offence to his master, and anticipating punishment, he assassinated him and seized the throne. Under Gyges Lydia became a powerful kingdom. He ultimately fell in battle against the barbarian Cimmerii (c. 650 B.C.).

Gyimes Pass. Pass over the Carpathians between Rumania and Transylvania, formerly Hungarian but Rumanian since 1919. It has railway communications from Targu Oena in Rumania to Csikszereba in Transylvania, the line there linking up with the circular rly. running from Brasso (Kronstadt) N. to Toplicea and then S.W. down the valley of the Maros. Prominent in the Great War, it was captured by the Rumanian armies in Aug., 1916, but recaptured by the Germans on Oct. 16. See Rumania, Conquest of.

Gylippus. Spartan general. During the Peloponnesian War he was sent to Sicily with a force of 3,000 men in 414 B.C., to assist the Syracusans. Assuming the chief command, he helped the Syracusans to destroy the Athenian besieging force. The Athenian ships were defeated in the harbour of Syracuse, while their land forces were compelled to surrender with their generals Nicias and Demosthenes. Gylippus later fell into disgrace for abstracting some of the treasure taken at the capture of Athens in 404.

Gymkhana (Pers. *gandkhana*, ball house). Name for a mixed sports and athletic meeting. It originated about 1860 in India, where horse and pony races were introduced as a means of recreation and amusement for British soldiers and officials. Further interest was given by including athletic events, such as tug-of-war, and military sports such as tent-pegging, as well as a variety of competitions of an amusing and less strenuous character. See Athletics.

Gymnastics (Greek, *gymnastikē*, training). The art of developing the body by means of suitable exercises. The Greeks fully understood the value of all-round



1. The horse: front rest position. 2. Flank vault, left. 3. Rear vault, left. 4. Right double feint; from the rest the gymnast swings both legs clear over croup, returns without pause, and vaults left. 5. Horizontal bar; left, bent arm rest; right, front lever position, a

difficult exercise. 6. Parallel bars: left, upper arm rest; right, double shoulder-stand. 7. Left, bent arm handstand; right, front lever in rest. 8. From right shoulder-stand, on right, to position on left. 9. Handstand and, in front, right elbow lever

GYMNASTICS: EXERCISES ON VAULTING HORSE, HORIZONTAL AND PARALLEL BARS

physical culture, and in the gymnasia the youth of Athens strove to approach the ideal of finely proportioned beauty as revealed in marble by their famous sculptors. From Greece the cult of gymnastics spread to Rome, where in the *Thermae* or baths, to which gymnasia were attached, athletic exercises were practised.

While it is true that active sports of various kinds have been always and universally popular, the science of gymnastics proper was neglected in medieval Europe, and its serious revival in modern times may be said to date from the dark days after Jena, when Prussia began to fit herself for the final struggle against Napoleon. Her example was followed in later years by other European countries, including Great Britain, though not in every case from a fixed purpose of improving the national physique.

Before long two opposing theories of gymnastics were developed. The first, based upon German practice, regarded free movements merely as preliminary to the more strenuous exercises performed with the help of apparatus, such as the horizontal bar, parallel bar, ladder and rings, weights, etc., involving feats of strength as well as of agility. The Swedish system, on the other hand, claims, and not unjustly, that elaborate and costly apparatus, and, indeed, apparatus of any kind, is a luxury that may be dispensed with by those who desire full and all-round bodily development with the sense of physical well-being which this involves. In recent years Swedish methods, with adaptations, have become increasingly popular in Great Britain, especially since the system of training in the British army has been altered in the same direction with improved results on the average standard of fitness reached by the recruits. See *Drill*; *Dumb-Bell*; *Eurhythmics*; *Indian Club*; *Physical Training*; *Swedish Drill*.

Gymnosophists (Gr. *gymnos*, naked; *sophistes*, wise man). Indian philosophical sect, remarkable for their austere method of life and indifference to pain. To purify the soul they mortified the body. They went naked, were vowed to celibacy, and believed in the transmigration of souls.

Gymnospermae (Gr. *gymnos*, naked; *sperma*, seed). Large class of flowering plants distinguished by having the ovules and seeds naked—not enclosed in a chamber (ovary or seed-vessel). It consists of the various natural orders of coniferous trees—yews, pines, firs, cypresses, cedars, cypresses, etc. They

have needle-like evergreen leaves, and the seed includes two cotyledons with a store of food for the seedling in each.

Gympie. Town of Queensland, Australia. It is 90 m. N. of Brisbane and 40 m. S. of Maryborough, its port. It is the centre of a goldfield which also produces silver, nickel, bismuth, antimony, and coal. Pop. 11,718.

Gyöngyös. Town of Hungary, in the co. of Heves. It is on the Gyöngyös river, 45 m. N.E. of Budapest. The town is noted for its Franciscan monastery. A thriving trade is carried on in cereals and a very choice wine is made. The manufactures include copper goods, bricks and tiles. Pop. 18,314.



Gymnastics. Statue of Greek athlete using bronze scraper to cleanse his skin after exercise. It is regarded as typifying the ancient Greek ideal of physical fitness

Vatican, Rome

Gyp. Pseudonym of the French writer Sybille Gabrielle Marie Antoinette de Riquetti de Mirabeau, comtesse de Martel de Janville. See *Martel*, *Comtesse de*.

Gyp. Name given to a male servant of resident members of a Cambridge college: His counterpart at Oxford is scout. The gyp is assisted by a woman, usually his wife, who is called a bedmaker. The name has been humorously derived from Greek *gyps* (vulture), with reference to a supposed voracity in snapping up perquisites. *Pron.* Jip.

Gypsies. The people known in England as Gypsies, and in other countries by a variety of names (*Gitanos*, *Zigeuner*, *Tchinghianés*, *Zingari*), call themselves *Romá* men. Large bands of these nomads appeared in Western Europe about 1417, though there is evidence that

smaller parties wandered westwards before that date. They came from the Balkan peninsula, where their tribes are still met with in considerable numbers. Rüdiger in 1777, and Jacob Bryant in 1785, announced the discovery of their ultimate origin from India.

Interest in Gypsies was fostered by the writings of George Borrow, but the serious study of the problem of their origin was first undertaken on the Continent. A. F. Pott, of Halle, published in 1844 his *Die Zigeuner in Europa und Asien*, in which he displayed the grammar and vocabulary of *Romani*, tracing the bulk of the words of Indian origin by means of parallels from Sanskrit and modern Indian tongues. At the same time he noted a large number of words borrowed from Greek, Hungarian, German, and other languages, picked up by the Gypsies in their wanderings. F. Miklosich extended and corrected Pott's work in his *Über die Mundarten und die Wanderungen der Zigeuner Europas* (On the Dialects and Wanderings of the Gypsies of Europe), 1880. He proved conclusively that the route taken by the Gypsies after leaving India lay through Armenia and across Asia Minor to the Balkans, where they must have remained for some centuries. On reaching the west they professed to be pilgrims from Egypt, hence the name by which they are known. The story was pure fiction, but it secured for them a freedom to travel which they soon abused, bringing upon themselves a savage persecution.

England perhaps has the cleanest record in this respect, but it is still popularly supposed that Gypsies commit the crime of stealing children. No case of this kind has ever been proved with evidence sufficient to satisfy an impartial mind, and the accusation may be dismissed as baseless. They are thought to be a distinctly criminal element in the population, yet an analysis of charges brought against Gypsies (including other vagrants alleged to have been Gypsies) in England during four recent years shows that out of 1,682 prosecutions only 18 were for crimes such as murder, abduction, or attempted suicide, 216 for theft, burglary, and receiving stolen property, 349 for assaults, drunkenness, obscenity, and using threats, and 76 for cruelty to horses, to children, desertion of wife, and begging. The remaining charges were for poaching, fortune-telling, and stealing wood, and for minor offences such as damaging turf, making fires too near the road, driving without



lights, hawking without licence and the like, many of which are incidental to the Gypsies' manner of life. The comparative absence of serious crime among a class of the community which has been variously estimated to number anything between 15,000 and 45,000, proves the baselessness of popular opinion on the subject.

In the matter of cleanliness Gypsies are often confused with other van-dwellers. The true Gypsy is, as a rule, more scrupulously cleanly than the average English peasant. This may to some extent be attributed to superstition. A plate from which a dog has eaten will not again be used for the preparation of human food. It has become *mokhadi* (defiled). This ceremonial defilement attaches to vessels used by a woman in child-birth, to female underclothing and the like, though these customary ideas vary from one family to another. A strange custom is that of burning the van and all the belongings of a deceased Gypsy. The idea behind this may be the fear of ghosts, a fear that is very prevalent among Gypsies.

Gypsies are very hospitable, and full of humorous and quaint sayings. The fortune-telling, the so-called Gypsy kings and queens, and the assumption of ancient lineage from the Pharaohs are all pretence for the bewilderment of the too credulous *gadzo* "non-gypsy." To what particular section of the population of North India Gypsies are most nearly related, as well as the occasion and date of their emigration from that country, are problems that remain to be solved.

F. G. Ackerley

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Gypsies. Group of Serbian Gypsy children. Above, typical family from Rumania

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Gypsophila (Gr., chalk-loving). Hardy perennial plants of the natural order Caryophyllaceae. Natives of India and Asia, they thrive well if given the ordinary treatment for annual plants. The tiny flowers are white or pink in colour. The plants prefer a dry and well-drained soil, and will not succeed in damp or sunless situations. They are chiefly grown for the use of their foliage in blending bouquets, and were introduced into England in 1759.

Gypsum. Mineral, a hydrous calcium sulphate, $\text{CaSO}_4 \cdot 2\text{H}_2\text{O}$, containing 32.5 p.c. of lime, 46.6

p.c. sulphur trioxide, and 20.9 p.c. of water. It occurs in nature as a soft, white rock, usually associated with rock salt, and consisting of a confused mass of small crystals, mixed usually with silica and clay.

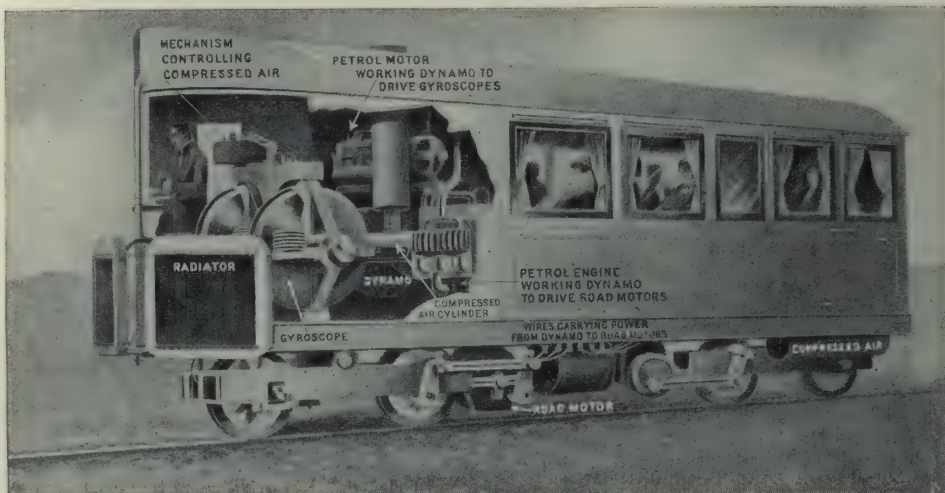
Selenite is the variety of gypsum which occurs in distinct crystals, occasionally three to four feet in length. The crystals belong to the monoclinic system, have a pearly, shining, lustrous surface, and can readily be split into thin, transparent sheets. Satin spar is the name given to a fine fibrous variety of gypsum having usually a pearly, opalescent appearance. Red or yellow tinted satin spar is coloured by ferruginous impurities. Alabaster is a fine-grained, compact variety of gypsum, resembling marble in appearance.

Gypsum is found in England, notably near Derby and Carlisle, and in Nottinghamshire and Cheshire; in France, near Paris; in numerous places in the U.S.A.—one of the greatest deposits being in the Great Salt Lake, Utah—and in smaller deposits in Europe and Africa. The variety found near Paris is extensively used in the preparation of plaster of Paris. Alabaster, the most celebrated variety of which comes from Volterra in Tuscany, is used for decorative work, vases, statuettes, etc., and selenite for optical apparatus. Large quantities of gypsum are used in the preparation of cements, fertilisers, as a basis of paints, and for making imitation marble. See Alabaster.

Gypsy-wort (*Lycopus euro-paeus*). Perennial herb of the natural order Labiatae. It is a native of Europe, N. Africa, Asia, Australia, and N. America. It has a creeping rootstock, tough, four-angled stem, and opposite elliptical leaves with margins deeply cut into coarse teeth. The small bluish-white flowers, dotted with purple, are crowded in whorls round the stem, just above each



Gypsy-wort. Stem with flower whorls situated above each pair of leaves



Gyroscope. Diagram illustrating the mechanism and construction of the Brennan monorail, which owes its stability on the rail to the use of gyroscopes

pair of leaves. It grows on banks of streams and ditches, and the juice makes a rich brown stain.

Gyron (Fr.). In heraldry, a wedge, formed by a diagonal line from the dexter chief meeting a horizontal line in the fess point. It is one of the sub-ordinaries (*q.v.*). When a shield is divided by a series of wedges it is said to be gyronny. Usually there are eight gyrons, but there may be only six, or as many as sixteen. Such irregularities should always be specified.



Gyron in heraldry

Gyroscope (Gr. *gyros*, circle; *skopein*, to look). Originally name of a scientific toy used to demonstrate the forces acting on rotating bodies. It is now extended to various devices which depend on gyroscopic forces.

The gyroscope consists usually of a heavy fly-wheel spinning at a high speed, supported on an axis at right angles to the plane of the wheel. Its motions and applications depend on the fact that if any body, symmetrical about an axis of greatest or least moment of inertia, is set rotating about that axis, then the direction of the latter remains unchanged in space unless external forces are applied. As examples of gyroscopic motion may be cited the wheels of a bicycle when in motion, the turning of a propeller of an aeroplane, and the spinning of a rifle bullet or shell, enabling it to keep its general direction unaltered.

The applications of the principle of the gyroscope are numerous and important. The gyro-compass de-

pends upon the stability of the motion; the directing of torpedoes is due to the gyroscope.

The Sperry aeroplane stabiliser consists of a gyroscope driven from the engine shaft. It is connected with the controls and automatically operates them against the tendency to roll, etc. The gyro turn indicator used in aeroplanes is driven at high speed by the air as the machine is flying, and gives warning of the machine turning.

The increasing use of steel and iron on board ship, especially naval vessels, made the ordinary magnetic compass unreliable, and many

passes are usually placed in the body of the ship, below deck, and connected by transmitters to repeating compasses on the steering platform, bridge, etc.

In 1907 Louis Brennan exhibited before the Royal Society a device for the application of the gyroscope to monorails. In such a system the cars are supported on single wheels, equilibrium being maintained by a gyroscope revolving at high speed in a vacuum. Since then a number of monorail systems working on the gyroscopic principle have been tested in Great Britain, U.S.A., and Germany. See Brennan; Torpedo.

Gythium. Ancient Greek city, in Peloponnesus. It stood at the mouth of the river Gythius, on the N.W. shore of the Bay of Laconia, 27 m. from Sparta, whose port it was. As the headquarters of the Spartan fleet it was often attacked; the Athenians burned it in 455 B.C. It was a member of the Achaean League (*q.v.*) from 195 B.C. until 146 B.C. Excavations have brought to light the remains of a Greek theatre and Roman ruins, but much of the ancient city lies beneath the sea. Marathonisi is the modern town.

Gyula. Town of Hungary, the capital of the co. of Békés. It stands on the White Kőrös river, which bisects the town, 36 m. N.N.W. of Arad. Formerly strongly fortified, it has a museum containing antiquarian relics, the ruins of an old castle, and a château. There is trade in wine, oil, flour, and spirits, while cattle are reared in the neighbourhood. Turtles are caught in the surrounding swamps. Pop. 24,284.



Gyroscope in its simplest form. While spinning, the top remains steady on the string

attempts have been made to replace it, the most successful being a gyro compass. This consists of a heavy horizontal spinning disk revolving in a vacuum at 8,000 or more revolutions a minute. The axis of the gyro wheel is connected with the pointer of a compass card, and so any deviation of the ship's course is at once measured. Gyro-com-



H. Eighth letter of the English and Latin alphabets.

By some it is regarded as a consonant, by others as a mere aspiration. It had the same form in Greek and originally the same value, but later was split in half to represent the rough and smooth breathings, H being kept to denote ēta (long e), whereas in Latin it continued to represent the original aspirate sound. In English, initial *h* is silent in some words, as honest, honour, hour; in others, as herb, humble, custom varies. In certain words, generally of foreign origin, after *c* and *g*, it is used to indicate the hard sound of those letters, as chemistry, chimaera, ghetto, Ghibelline. In what, when, which, the digraph *wh* is in certain parts of Great Britain pronounced *hw*. H is silent after a vowel, which it generally lengthens. See Alphabet.

H. In music, the German name for B natural. Thus, Schubert's famous Unfinished Symphony is called in Germany, Symphony in H moll, i.e. in B minor. This use of an eighth letter arose from the resemblance of the sign for a natural to the Gothic "h."

Haakon. Masculine Christian name. Of Teutonic origin, it means high kin and is chiefly known as that of a sequence of Norwegian kings. There were seven of these. The name is sometimes spelled Haco. Pron. Hawkon.

Haakon I (915-961). King of Norway, c. 938-961, known as The Good. Youngest son of Harold Haarfager (Fair-Hair), he was brought up in England as foster-son of King Athelstan. After his father's death he was furnished

with ships by the English king and sailed for Norway. Having defeated his half-brother, Eric Blood-Axe, Haakon was proclaimed king about 938. He was killed in 961, whilst repelling an invasion by the sons of Eric.

Haakon IV (1204-63). King of Norway, 1223-63. Known as The Old, he brought Iceland and Greenland under the Norwegian crown. He was defeated by Alexander III of Scotland at Largs, in 1263, and died at Kirkwall Islands.

Haakon VII (b. 1872). King of Norway from Oct., 1905. Born Aug. 3, 1872, the second son of Frederick VIII of Denmark, in 1896 as Prince Charles he married Maud, youngest daughter of the prince of Wales,



Haakon VII,
King of Norway

afterwards King Edward VII. In Oct., 1905, on the separation of Norway from Sweden, he was elected king of the former country and took the name of Haakon. He was crowned June 22, 1906. His heir is Prince Olaf (b. 1903).

Haarlem. Town of Holland, capital of the province of N. Holland. It lies

about 14 m. W. of Amsterdam, on the river Spaarne. The town is well served by rlys., both to The Hague and to Amsterdam. The industries of Haarlem are small, cotton manufacture, bleaching and dyeing, printing and type-founding being the chief, but the town is famous as the centre of an important bulb growing and exporting industry.

Haarlem possesses many architectural and artistic treasures. Its chief features are the Groote Kerk, on the market place, a large cruciform church of the late 15th century, with a tower over 250 ft. high; the town hall, in the Netherlands Renaissance style, containing a superb collection of paintings by Frans Hals, and other notable Dutch pictures; the Teyler Museum, antiquarian, geological, and



Haarlem arms



Haarlem. The Weigh-house and quays on the Spaarne, looking towards the Groote Kerk

artistic: the old Meat Market, one of the most beautiful buildings in Holland, built 1602-3, now used for the archives; and small museums of colonial industries and of industrial art. In the market place is a statue of Lourens Janszoon-Coster.

Haarlem was the seat of William, 1st count of Holland, and suffered a terrible massacre after vainly resisting the seven months' siege of Frederick of Toledo, 1572-73. Retaken by William of Orange in 1577, its great prosperity was in the 17th century. Pop. 74,816.

Haase, Hugo (1863-1919). German socialist. Born at Allenstein, Prussia, of Jewish parents, he



Hugo Haase,
German socialist

studied law at Königsberg University, and practised in that town. He was a member of the Reichstag from 1897-1906. Re-elected in 1912, he shared with Bebel the chairmanship of the socialist party. After Bebel's death Ebert and Haase were joint presidents of the party, the latter being its chairman in the Reichstag. He seceded from the main socialist body in 1916 on the question of voting war credits in the Reichstag. He was one of the engineers of the revolution of Nov., 1918. He was shot by a Viennese named Voss on Oct. 8, 1919, as he and his wife were about to enter the Reichstag, and died in Berlin, Nov. 6, as the result of his wounds. See Bebel; Ebert.

Habakkuk. One of the minor prophets. His work was contemporaneous with that of Jeremiah. He lived at the time when Judah was invaded by the Chaldeans, and taught that they were the instruments of God to punish the Jews for their lawlessness. His book consists of two chapters of prophecy and a lyrical hymn.

Habberton, JOHN (b. 1842). American author and journalist. Born at Brooklyn, Feb. 24, 1842, he learned the printing trade in New York, and served in the Civil War. He held editorial posts on The Christian Union, The New York Herald, and Collier's Weekly. He is the author of many stories about children, the most successful of



which, Helen's Babies, 1876, had a large sale in America and Great Britain. Other stories by him are Other People's Children, 1877; Budge and Toddie, 1909.

Habeas Corpus

(Lat. have the body). Term of English law. It forms the opening words of various writs, e.g. *Habeas Corpus ad faciendum et recipiendum*, to remove a cause from a lower court; *Habeas Corpus ad prosequendum*, to remove a prisoner to the proper jurisdiction. But the most famous, the safeguard against arbitrary imprisonment, is the high prerogative writ of *Habeas Corpus ad subsciendum*. It is addressed to one who detains or imprisons another, and commands him to "have the body" of the person in the Court of King's Bench on a certain day, together with the cause of his detention. If the court decides that the cause shown does not justify the detention it orders a release.

The writ is as old as the Common Law itself; but in 1679 it was thought proper to pass the Habeas Corpus Act, to prevent certain evasions of the law which had sprung up under the arbitrary Stuart kings; e.g. after the receipt of the writ by one gaoler, the government would remove the prisoner to another gaol, and then the first gaoler would make answer that he no longer had the body of the prisoner, and therefore could not produce it in court. Again, judges sometimes refused to hear applications for the writ. These and other evasions were made punishable; but the Act only applies to criminal cases. In addition, the writ is used where, for instance, a child is detained from its father or mother or other lawful guardian; and was used by the friends of Mrs. Jackson in the celebrated case

where it was decided that a husband has no power to detain his wife against her will. In times of national emergency the Habeas Corpus Act may be suspended by a special Act. It is also suspended automatically where martial law (q.v.) obtains.

Haberdasher. Word used for a retail trader who sells articles such as pins and needles, buttons, and other accessories of dress, i.e.

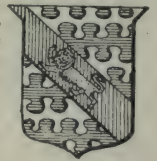


Haarlem. The Groote Kerk, or Great Church, with the old Meat Market on right. Top, left, the Stadhuus which contains the art museum

what are known as small wares. To-day haberdashery is merely a branch of the drapery trade. The word is an old one, and its origin and early meaning are uncertain.

Haberdashers' Company.

Eighth of the twelve chief London city livery companies. Incorporated 1447, it was originally a branch of the Mercers', with S. Catherine the Virgin and S. Nicholas as patron saints. Haberdashers' Hall, in Gresham Street, E.C., is built on a site bequeathed in 1478 by William Baker. The first hall was burnt with the archives in 1666; the second, by Wren, was, with the exception of part of the court-room, burnt in 1864. The company, which has a corporated income estimated at £9,000 and a trust income of £49,000, manages several almshouses and schools.



Haberdashers' Company arms

Habit (Fr. *habit*, Lat. *habitus*, dress). Outer garment, such as the riding dress of a woman, the frock of a monk, or other garment that is distinctive for special occasions or avocations. See Costume.

Habit (Lat. *habitus*, state, manner). Fixed disposition or condition of mind or body resulting from the frequent repetition of the same action, which is afterwards performed under the slightest impetus as it were mechanically and without any special effort of will.

Most ordinary actions of daily life are the result of habit. Habit is beneficial to the individual in so far as it relieves him from the necessity of concentrating his attention on occasion of each performance of an activity, but its mechanical nature is likely to hamper initiative. The first result of habit is that it enables repeated acts to be carried out with greater facility and promptitude; secondly, as the effort needed grows less, the consciousness of those acts is weakened; thirdly, the repetition brings about an inclination to reproduce them, which more or less resembles instinct, from which, however, habit differs in remaining to a greater or less extent under the influence of volition.

Habit and Repute. Term used in Scots law. In Scotland, if a man and a woman live together openly, i.e. by habit and repute, the courts of law will, if desired, give a declaration that they are legally married. The term is also applied to what are known as habitual criminals.

Habitant (Lat. *habitare*, to inhabit). Name given to original settlers at Quebec and still applied to farmers. They have a marked individuality of their own, which includes a patois of their original French. They have their own literature, the principal authors being Fr chet te, De Gasp , and the Abb  Casp rain. See Canada.

Habitual Criminal. Defined by the Prevention of Crimes Act, 1908, as one who, since attaining the age of sixteen, has been at least three times convicted of crime, and who is leading persistently a dishonest or criminal life. In English law such persons, if again convicted of a serious offence and sent to penal servitude, may also be sentenced to not less than five nor more than ten years' preventive detention. This is a milder form of imprisonment, designed less for punishment than to protect society from its irreclaimable foes. See Borstal System; Recidivist.

H.A.C. Abbrev. for Honourable Artillery Company (*q.v.*).

Hachette. Name of a firm of publishers and booksellers. Founded in Paris in 1826 by Louis Christophe Fran ois Hachette (d. 1864), primarily for the publication of classical works, the house now issues general literature and the Joanne series of French and English guide-books. The firm has over 750 rly. bookstalls in France and agencies in the French colonies. The London branch, established in 1859, has produced an extensive series of works for the study of French, German, Spanish, Italian,

and other European languages. In the Great War over 2,000 employees joined the British and French forces. The Paris house is at 79, Boulevard Saint-Germain, and the chief London house at 18, King William Street, W.C.

Hachioji. Town of Japan. In the island of Honsh , it is 25 m. W. of Tokyo. Silk-worm rearing and silk weaving are the principal industries. Pop. 24,000.

Hackberry. Name of the fruit of a tree, *Celtis occidentalis*, of the order Ulmaceae, also known as nettle-tree (*q.v.*).

Hacksack. Town of New Jersey, U.S.A., the co. seat of Bergen co. It stands on the Hacksack river, 12 m. N. of Jersey City, and is served by the New York, Susquehanna and Western and other rlys. It is a residential district, and has a county court house and an old Dutch church. Silk goods, wallpaper, and jewelry are manufactured. Hacksack was settled in 1640 and incorporated in 1868. Pop. 16,010.

Hackenschmidt, GEORGES (b. 1878). Russian wrestler. After a successful career on the Continent he came to England about 1901, and appeared at the Tivoli and other music-halls, where his immense strength and magnificent physique made him extremely popular. In 1904 he beat Jenkins at the Albert Hall, and in 1906 won the championship from Madrali, the Turk, at Olympia. His measurements were: height, 5 ft. 8 ins.; weight, 14 st. 10 lb.; neck, 22 ins.; chest, 52 ins.; biceps, 18 ins.; calf, 17 ins. In 1908 he lost the championship to Frank Gotch, at Chicago. During the Great War he was interned in Germany.

Hacker, ARTHUR (1858-1919). British artist. Born in London, Sept. 25, 1858, he studied at the



Arthur Hacker,
British artist
Russell

Royal Academy schools, and in Paris under Bonnat, exhibiting his first picture at the R.A. in 1880. In 1886 he joined the New English Art Club, but continued to exhibit at the Academy, and in 1892 his Annunciation was bought by the Chantry Trustees for the Tate Gallery, and his *Syrinx* for the Manchester Gallery. He became A.R.A. 1894, R.A. 1910, and died in London, Nov. 12, 1919. His early reputation was made by cottage interiors with figures; for a time French influence was marked. See Annunciation.

Hackney. Breed of horse originating from a cross between the race-horse and the cart-horse, used for riding, and now bred for driving also. From the practice of hiring them out the word acquired its application to vehicles plying for hire, as hackney-coach or hackney-cab. A shorter form is hack, applied to one who will drudge for any employer. See Cab; Horse.

Hackney. Parish and mun. and parl. bor. of N.E. London. Covering an area of 5½ sq. m., it is served by the G.E. and N.L. Rlys., has excellent bus and tramway facilities, and is bounded by Walthamstow and Leyton, N.; Bethnal Green, E.; Shoreditch, S.; and Tottenham, Stoke Newington, and Islington, W. It has developed rapidly since the middle of the 19th century around Mare Street, Church Street, Grove Street, and Well Street. There are a town hall, 1897, technical institute, and free libraries. Electricity works were inaugurated in 1901. Hackney includes part of Victoria Park (*q.v.*), London Fields, Hackney Marshes, 339 acres, opened in 1894, and Hackney Downs, 41½ acres.

The manor belonged to the Knights Templars, then to the Knights of S. John of Jerusalem, and members of noble families once had their country seats here. Of the ancient church of S. Augustine, supplanted by the parish church of S. John, only the tower, and chapel of Sir Henry Rowe, 1614, remain. The district preserves memories of Archbishop Sancroft, Milton, Defoe, Matthew Henry, Gilbert Wakefield, John Howard, the Howitts and the John Ward satirised by Pope, and is noted for its churches, dissenting chapels, educational and charitable institutions, and the bygone nurseries of Conrad Loddige, Hackney (Congregational) College, now at West Hampstead, was founded in Well Street in 1803. There is a stone memorial at Shacklewell Green, unveiled 1920, to over 100 men of the district who fell in the Great War. Memorials have also been erected at the church of S. Mary of Eton, Hackney Wick, and in the grounds of the Town Hall. Each of the three sections of the parl. bor., N., Central, and S., returns one member. Pop. 222,533. See History and Antiquities of the Parish of Hackney, T. Robinson, 2 vols., 1842.

Hackston, DAVID (d. 1680). Scottish Covenanter. A member of a Fifeshire family, he became a leading Covenanter, and was present at the murder of Archbishop Sharp, May 3, 1679. He was one of the Covenanters' leaders at the battles of Drumeloc and Bothwell

Bridge. On July 22, 1680, he was captured after a skirmish at Airdsmoss, Ayrshire, and executed at Edinburgh on July 30.

Hadad. Name of certain Edomite kings or princes in the O.T. (1) A king of Edom, who succeeded Husham and defeated the Midianites (1 Chron. i, 46). (2) An Edomite of royal blood, who was taken to Egypt as a child to escape massacre at the hands of Joab, David's commander-in-chief, and later married Pharaoh's sister-in-law. At the death of David, he returned to Edom and became a troublesome enemy to Solomon (1 Kings xi, 14). Hadad or Adad was also the name of a Syrian deity.

Haddington. Royal and mun. burgh and the co. town of Haddingtonshire, Scotland. It stands on the Tyne, 17 m. E. of Edinburgh on the N.B.R. The 13th century church of S. Mary is surmounted by a square tower, 90 ft. high, and the choir contains the tomb of Jane Welsh, the wife of Thomas Carlyle. At one time a

to a cousin, George Baillie, who took the additional name of Hamilton. In 1917 George, the 11th earl, died and was succeeded by his grandson George as 12th earl. The family seat is Tynninghame, Haddingtonshire, and the earl's eldest son bears the courtesy title of Lord Binning.



Haddington, Scotland. The town viewed from the tower of the United Free church

Haddingtonshire OR EAST LOTHIAN. S.E. maritime co. of Scotland. With about 40 m. of coast on the Firth of Forth and North Sea, its area is 267 sq. m. Along the S. border are the Lammermuir Hills (Lammer Law, 1,733 ft.), whence the surface has a gradual slope to the coast; in a few eminences occur—Garleton Hill (590 ft.), Traprain Law (700 ft.), and North Berwick Law (612 ft.). The Tyne, the chief stream, flows N.E. to the sea.

Agriculture and the pasturage of sheep are actively pursued, and fishing and fish-curing occupy a number of the inhabitants. The Dunbar red lands are an area of exceptional fertility. Large quantities of coal and limestone are obtained, but manufactures are not extensively prosecuted. The N.B.R. serves the county. Haddington (co. town), Dunbar, and North Berwick are the principal towns. Berwick and Haddington return one member to Parliament. Pop. (1921) 47,487.

LITERARY ASSOCIATIONS. Bishop Gilbert Burnet's first benefice was Saltoun. His pupil, Andrew

Fletcher, is generally known as Fletcher of Saltoun, and is widely remembered for his saying that so long as he might write the ballads for a people he cared not who made its laws. John Knox is believed to have been born in the Gifford Gate of Haddington, and was educated in the grammar school of this town. At Haddington, too, Jane Welsh Carlyle was born and is buried. John Home, the author of Douglas, lived for several years at the farm of Kilduff, and a statue to him stands in front of the Town Buildings of Haddington. At Gifford was born John Witherspoon, 1712-94, writer of

many works on theological and other themes, and principal of Princeton College, New Jersey. At Ormiston is a granite obelisk to the missionary Robert Moffat, who was born there. The Bass Rock (*q.v.*) was at one time the prison of Alexander Peden, the Covenanter. There is much in the work of Sir Walter Scott concerning the county, notably in The Bride of Lammermoor.

Haddock (*Gadus aeglefinus*). Common British fish of the same genus as the cod, which it generally

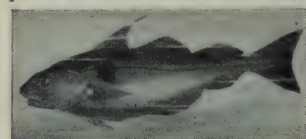


Haddingtonshire arms



Haddingtonshire. Map of the maritime county in the south-east of Scotland

resembles. It may be distinguished by the black line running along each side, and the black patch on either side of the body.



Haddock, a common British fish



Haddington burgh arms

royal residence, Haddington was the birthplace of Alexander II. It has one of the principal grain markets in Scotland, and woollen, agricultural implement, and other manufactures. Market day, Fri. Pop. (1921) 4,053.

Haddington, EARL OF. Scottish title borne since 1627 by the family of Hamilton. Sir Thomas Hamilton, who held a number of high positions in Scotland under James VI, including those of secretary of state, keeper of the privy seal, and president of the court of session, was made a baron in 1616 and earl of Melrose in 1619. In 1627 he exchanged his title of Melrose for that of Haddington. His son, the 2nd earl, was a leading Covenanter.

Charles, the 5th earl, married in 1674 Margaret Leslie, who became countess of Rothes. By arrangement her title passed to their eldest son, while the second, Thomas, became earl of Haddington. He was made hereditary keeper of Holyrood, a position which the 9th earl surrendered in 1843 in return for £40,000. This 9th earl was made a peer of the United Kingdom in 1827. He was lord-lieutenant of Ireland, 1833-34. He left no sons, so his Scottish titles passed



Haddon Hall, Derbyshire. Left, part of terrace, with Dorothy Vernon steps. Right, Long Gallery or Ballroom

The haddock is usually less than 2 ft. in length, though 3 ft. is occasionally reached. Haddocks are found in shoals, and feed mainly on molluscs, small crustaceans, and the spawn and fry of other fish. They are taken in the trawl net and also on lines baited with mussels. They spawn in winter near the coast, and it is estimated that a large specimen will lay 1,500,000 eggs in the season. Economically the haddock is a most important food fish. It is largely eaten fresh, but is also split and smoked, the best qualities being known as finnan haddocks from Finnan or Findon, Kincardineshire. *See Fish.*

Haddon, ALFRED CORT (b. 1855). British anthropologist and zoologist. Born in London, May 24, 1855, he studied at Cambridge. He was professor of zoology in the Royal College of Science, Dublin, 1880-1901; became lecturer in ethnology at Cambridge, 1900-9, and London, 1904-9, and since then reader in ethnology at Cambridge. He was president of the Royal Anthropological Institute, 1901-2. Besides numerous papers, his works include *Evolution in Art*, 1895; *Study of Man*, 1898; *Head-hunters*, 1901; *Races of Man*, 1909; and *History of Anthropology*, 1910.

Haddon Hall. Ancient baronial mansion in Derbyshire, England. Picturesquely environed and situated on a limestone foundation above the left bank of the Wye, 2 m. S.E. of Bakewell, on the road to Derby, it passed from the Norman family of Peveril or Peverel to that of Avenell, and then, in the 12th century, to the Vernons. Towards the close of the 16th century, by the marriage of Dorothy Vernon to Sir John Manners, it passed to the Rutlands.

Maintained in a state of careful preservation by the Rutlands, though not used by them as a dwelling since the early part of the 18th century, Haddon consists of two quadrangles on different levels.

Features are the 12th-15th century chapel, 14th-17th century banquet hall, tapestried drawing-room, Elizabethan Long Gallery or ballroom—Haddon's special glory—ante-room with steps to the winter garden, tapestried state bedroom, kitchen, dining-room, Eagle or Peveril's Tower and terrace.

With the terrace steps is associated the legend of Dorothy Vernon's elopement with Sir John Manners, first mentioned in print about 1820, fostered by Eliza Meteyard and other writers of fiction, and revived by Sir Arthur Sullivan's opera, *Haddon Hall*, 1892. With Wingfield, Haddon supplied Walter Scott with materials for his picture of Martindale Hall in *Peveril of the Peak*. *See Gallery*; Rutland, earl and duke; consult Haddon Hall, S. C. Hall, 1871; Haddon, G. Le Blanc Smith, 1906.

Haden, SIR FRANCIS SEYMOUR (1818-1910). British etcher and surgeon. Born in London, and

half-sister he had married in 1847. In 1880 he founded the Society of Painter Etchers. He retired from surgical practice, 1887, was knighted in 1894, and died June 1, 1910.



F. Seymour Haden

Hadendoa. Tribe of Hamitic pastoral nomads in the Nubian desert between Suakin and the Abyssinian frontier. Their

mop-like hair earned for them and the Baggara the name Fuzzy-Wuzzies during the Mahdist revolt (1882-98). Osman Digna was of this tribe. *See Mahdi.*

Hades (Gr., the invisible). In Greek mythology, properly the name of the god who ruled the underworld, also called Pluto. He

was the son of Cronos and Rhea, and brother of Zeus and Poseidon. His wife was Proserpine or Persephoné (*g.v.*), daughter of Demeter. Hades is represented as wearing a helmet, which had the power of rendering him invisible. He is the Roman *Dis* or *Orcus*.

In later mythology, the name Hades

came to be used for the realms of the god. These were regarded as being somewhere inside the earth. The river Styx was the boundary, and over it the dead were ferried by Charon. On the opposite shore was the three-headed dog Cerberus, the vicious guardian of Pluto's realm. Three judges judged the dead,



Sir F. Seymour Haden. Kigaren Castle on the Teifi, a typical etching by the artist

educated at University College, he studied surgery at the Sorbonne, Paris, and at Grenoble, and settled in private practice in London in 1847. While in Paris, he spent his evenings at the art schools, but did not take up etching seriously till 1858, when he made the acquaintance of Whistler, whose

namely Minos, Rhadamanthus, and Aeacus. The virtuous were sent to dwell in Elysium (*q.v.*), which is generally regarded as a separate place; in Virgil, however, it is in Hades. The place of punishment and torture was Tartarus; here were confined such malefactors as Ixion, and the Giants who rebelled against Zeus. See Hell. *Pron.* Haydeez.

Hadfield. Village and eccles. district of Derbyshire. It is 13 m. from Manchester by the G.C. Rly., which has a station here, and 1½ m. N.W. of Glossop. The industries include calico and print works. Between here and Woodhead is the source of the Derwent, and a series of reservoirs from which Manchester obtains some of its water. Pop. 6,500.

Hadfield, Sir ROBERT ABBOTT (b. 1859). British metallurgist. He initiated and carried out a series of investigations on the microstructure of steel and its alloys, chromium steel, silicon steel, high-speed tool steel, etc. His discovery of manganese steel in 1882 increased the prosperity of his Sheffield steel works, and brought him recognition from every steel-producing country. He made a study of low hysteresis steel and contributed a number of technical papers on the subject of steel and steel testing to scientific periodicals. Master cutler of Sheffield, 1899-1900, he was president of the Iron and Steel Institute 1905-7. He was made a baronet in 1917, having been knighted in 1908. See Steel.



Sir Robert Hadfield,
British metallurgist
Russell

Hadham. Two parishes of Hertfordshire, England. Great or Much Hadham is near the river Ash, 4 m. S.W. of Bishop's Stortford, with a station on the G.E.R. The manor was given by King Edgar to the bishop of London. The old palace was built about 1400. The existing mansion dates from 1780. The Early English church of S. Andrew, much restored, was erected in 1300.

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Little Hadham, formerly Hadham Parva, 3½ m. N.W. of Bishop's Stortford, has a 12th century church, with a timbered porch, Perpendicular tower, and a chancel restored in 1885, and is associated with the Capel family. Near by is Hadham Hall, an Elizabethan structure. Brickmaking is a local industry. Pop. Great Hadham, 1,606; Little Hadham, 744.

Hadhramaut or **HADRAMAUT.** District of Arabia. Extending from the Aden Protectorate and the Yemen to Oman, this little-known region lies along the Gulf of Aden and the Arabian Sea, and is bounded on the N. by the Great Arabian Desert. From Aden the British exercise a certain political control over it. Its chief natural features are the Jebel Tsahura (alt. 8,000 ft.) and the great, usually dry, Wady Hadhramaut. Some of its valleys are fertile, but it is a poor country. Shibam is its chief town, and its port is Makalla, or Mokella, which does a fair amount of trade. The pop. of the region is estimated at 500,000, mostly Beduin. The five Kuria Muria Islands, lying off the coast towards Oman, are British, the sultan of Muskat ceding them to provide a landing for the Red Sea cable.

Hading, JANE (b. 1859). Stage name of Jeanne Alfrédine Tréfour, French actress. Born Nov. 25, 1859, her talent, which had shown itself as a child, was developed in the Marseilles Conservatoire, and she was about 14 years old when she began to make a name for herself at Algiers and Cairo. She was first seen in Paris in 1879, at the Palais Royal in La



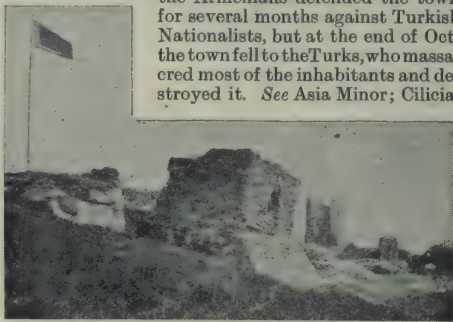
Jane Hading,
French actress

Chaste Suzanne. Six years later she was engaged by Victor Karing, whom she married, at the Gymnase, but her greatest success was in Frou Frou, 1886. Associated with the Comédie Française, in 1896 she acted the title-rôle in Sardou's *Marcelle*. She retired in 1920.

Hādġ or **HĀDJĠ**. Arabic term applied to a Moslem on his return from the pilgrimage (*hādġ*) to Mecca and Mount Arafat which is incumbent, where it is possible, on every devout Mahomedan once in his lifetime. One who has made the pilgrimage has the title *el-hādġ*, i.e. the pilgrim, prefixed to his name, and the right to wear a

green turban. See Kaaba; Mecca; consult also Pilgrimage to El Medina and Meccah, R. F. Burton, 1855-56.

Hadġin or **HĀJIN.** Town of Cilicia, in the vilayet of Adana, Asia Minor. Dating from the 14th century, it lay 80 m. N. of Adana, situated at an alt. of 3,200 ft., on the southern slopes of the Anti-Taurus. Most of its population, numbering about 10,000, were Armenians, and a Protestant mission was established there. In 1920 the Armenians defended the town for several months against Turkish Nationalists, but at the end of Oct. the town fell to the Turks, who massacred most of the inhabitants and destroyed it. See Asia Minor; Cilicia.



Hadleigh, Essex. Ruins of 13th century castle, looking east
By courtesy of The Salvation Army

Hadleigh. Parish and village of Essex, England. It is 5 m. W.N.W. of Southend-on-Sea. Fragmentary ruins remain of Hadleigh Castle, built by Hubert de Burgh, earl of Kent, in the 13th century, given by Henry VIII to Anne of Cleves, and abandoned in the 16th century. The church of S. James is Norman, with a wooden tower. The Salvation Army founded a farm colony at Hadleigh in 1891. Pop. 1,707.

Hadleigh. Urban district and market town of Suffolk, England. Situated on the Brett, 9 m. W. of Ipswich, with a station, a branch terminus of the G.E.R., it was once the centre of the woollen trade. Here Guthrum the Dane is said to have been buried. Malting and corn-milling are local industries. Market day, Mon. Pop. 3,200.

Hadley, ARTHUR TWINING (b. 1856). American scholar. Born at New Haven, Connecticut, April 23, 1856, he was educated at Yale, where his father was professor, and at Berlin. In 1879 he himself became a tutor at Yale, in 1883 was made lecturer on railroad administration, and in 1891 professor of political economy. In 1899 he was chosen president of Yale. In 1914 he was special lecturer at Oxford. His publications include *Standards of Public Morality*, 1907, and *Undercurrents in American Politics*, 1915.

Hadley Wood. District of Barnet, Middlesex, England. Situated on the Hertfordshire border,

with a station on the G.N.R., its woodland scenery covers about 250 acres. The cruciform Perpendicular church of S. Mary, with ivied and turreted tower containing an old iron beacon, dates from the 15th century, and was restored in 1848-52. Part of Hadley, or Monken Hadley, Common was the scene of the battle of Barnet, 1471, the spot where Warwick is supposed to have fallen being marked by an obelisk known as Hadley High Stone. Like High or Chipping Barnet, E. Barnet, New Barnet, and Friern Barnet, the district of Hadley Wood is a growing one. *See* Barnet.

Hadnall. Parish and village of Shropshire, England. It is 5 m. N.E. of Shrewsbury, with a station on the L. & N.W.R. The parish church contains the tomb of Viscount Hill (1772-1842). Pop. 8,600.

Hadow, SIR WILLIAM HENRY (b. 1859). British educationist. The son of a Gloucestershire clergy-

man, he was educated at Malvern and Worcester College, Oxford, of which he was elected fellow. He remained on the teaching staff there until 1909, when he was appointed principal of Armstrong College, Newcastle, and in 1918 he was knighted. In 1918, also, he was chosen director of education on the lines of communication in France. A leading authority on music, Hadow edited *The Oxford History of Music* and wrote many books on the subject, including *Studies in Modern Music*, 1894 and 1895.

Hadrian. Roman emperor, A.D. 117-138, whose full name was Publius Aelius Hadrianus. Born (76) at Rome or at Italica in Spain,



Hadley Wood. Parish Church of S. Mary, with the old beacon in the turret

he was brought up, adopted, and designated successor by the emperor Trajan. Hadrian believed that the Roman empire had reached its limits, and that the policy of conquest must give place



Hadrian, Roman Emperor
From the bust in the Uffizi Gallery, Florence

to a policy of consolidation. He made peace with the Parthians, Trajan's campaign against whom had ended so disastrously, and is said to have contemplated retirement from Dacia. The greater

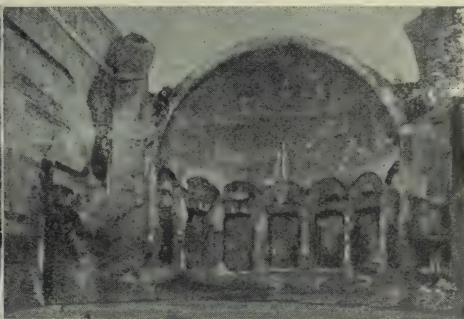
part of Hadrian's reign was spent in travel. There was scarcely a province of the empire which he did not visit.

Though a voluptuary, Hadrian worked strenuously to promote the welfare of his subjects. One of his most notable reforms was the substitution of direct collection of taxes for the iniquitous system of tax-farming; he also inaugurated legal reforms, and organized for the administration of the empire a regular civil service.

Outward deference was shown to the senate, but to all intents and purposes Hadrian was an absolute ruler. He was a man of wide culture, and was a leader in the antiquarian movement, which sought its literary models in the past. During the last years of Hadrian's reign occurred the last revolt of the Jews which ended with their virtual extermination in Judaea. Shortly before his death Hadrian composed the well-known poem to his soul, of which more than 100 English versions exist. *See* The Emperor Hadrian, F. Gregorovius (Eng. trans. M. E. Robinson, 1898).

Hadrian's Villa (Ital. *Villa Adriana*). Country seat of the Roman emperor Hadrian. It is 2 m. S.W. of Tivoli, the ancient Tibur, and 15½ m. by tramway E.N.E. of Rome. The grounds, covering an area of several sq. m., and the ruins some 170 acres, are a marvel of landscape gardening, and contain the remains of Hadrian's palace, of temples, baths, theatre, a stadium, colonnaded gardens, and imitations of other famous buildings. Excavations were begun in the 16th century.

Hadrian's Wall. Roman rampart, 73½ m. long, between Bowness on Solway Firth and Wallsend-on-Tyne, England. Erected by Hadrian about 122, and repaired by Severus about 208, it was mainly of freestone blocks with a rubble core, perhaps 18 ft. high



Hadrian's Villa, Tivoli. Remains of the swimming bath or Natatorium. Right, interior of the Philosophers' Hall, at the north-east corner of the square

bleeding. Bleeding from the lungs, when bright and frothy blood is expectorated, should be treated similarly; and also bleeding from the stomach when blood, dark in colour, and often resembling coffee-grounds, is vomited.

External haemorrhage may be arterial, venous, or capillary. Arterial haemorrhage occurs when an artery, *i.e.* a blood-vessel conveying blood from the heart, is injured. It is recognized by the bright-red colour of the blood, which, unless the wound is very deep, is seen to escape from the end of the artery nearer the heart in pulsating jets, corresponding in rhythm to the heart-beat. Venous haemorrhage occurs when a vein, *i.e.* a blood-vessel conveying blood to the heart, is injured. The blood either wells up from the depth of the wound, or is seen to flow from the side of the wound farther away from the heart. It is dark in colour, and escapes in a steady stream. Capillary haemorrhage, *i.e.* bleeding from the capillaries, which are very fine blood-vessels found in the skin and almost universally throughout the body, occurs in all wounds to a greater or less extent. It is recognized by the steady oozing of bright red blood from all parts of the wound.

In some cases a tourniquet is essential, and this may be expediently by lightly bandaging a hard pad on the pressure-point, and then twisting the bandage with a stick so as to tighten the bandage. Bleeding from a vein can usually be stopped by pressure upon the wound, but if this fails, pressure should be exerted on the side of the wound farthest away from the heart. In bleeding from a varicose vein, pressure should be applied on both sides of the wound. Bleeding from capillaries can always be stopped by pressure upon the wound, or by the application of hot (not warm) or cold water. *See* Blood; First Aid.

Haemorrhoids (Gr. *haima*, blood; *rhein*, to flow) or **PILES**. Varicose veins in the anus and lower part of the rectum. The most frequent causes are a sedentary life, chronic constipation, and any disease which retards the circulation through the veins, such as congestion of the liver and chronic alcoholism. Women suffer less than men, but pregnancy and diseases of the uterus sometimes bring on piles. When the enlarged veins protrude from the anus and are covered with skin, they are known as external piles, those within the anus in the lower part of the rectum being referred to as internal piles.

The symptoms of piles are not necessarily serious, and many persons are affected to a moderate extent without experiencing much inconvenience. Haemorrhage from the anus is often the first noticeable symptom, and if neglected may become serious in amount, and give rise to anaemia. Itching is a frequent symptom. External piles do not, as a rule, demand other treatment than the avoidance of constipation and the use of ointments before defaecation. The habitual use of purgatives is to be deprecated.

Haeseler, GOTTILIEB VON (1835-1919). German soldier. Born in 1835, he served in the Danish War of 1864, the Austro-Prussian War, 1866, and the Franco-Prussian War, 1870-71, when he was selected by Moltke as one of his leading generals and gained the name of the Devil of Metz. He retired in 1903 with the rank of field-marshal, but continued to advise the general staff. He reappeared in the field during the Great War, and was in command at Verdun during the opening stage of that battle. He died in Berlin, Oct. 27, 1919.

Haff. Name given to the lagoons on the Baltic coast of Prussia. They are due to the gradual formation of an alluvial bar, or *Nehrung*, across the mouth of an estuary where the outward silt-laden current of a river is checked by the different direction of the currents farther out to sea. The haff, or lagoon, within the bar, is steadily being silted up since the bar interferes with the free outflow of the river floods. *See* Lagoon.

Hafid, MULAI (b. 1873). Sultan of Morocco. Son of Mulai Hassan II, he was educated at El Azhar

University, Cairo, and on his return to Morocco was appointed viceroy to the southern part of the kingdom. The policy of his half-brother, Abd-el-Aziz, led Mulai Hafid to rebel, and in 1907 he proclaimed himself sultan and drove Abd-el-Aziz from the throne. In 1912 he was deposed by his brother Mulai Yussuf.

Hafiz (d. c. 1388). Name used by the Persian poet Shams-ud-din Mohammed. He was born at Shiraz, capital of Fars, where he appears to have spent most of his life. His fame as a poet, philosopher, and student of the Koran was such that a college was specially established for him, where he taught for many years. Hafiz, though his personal life earned the censure of the more austere, was a member of a devotional order of Islam.

His great work was the *Diwan*, a collection of short lyrical poems in the form known as the *ghazal*, in expression sensuous and mellifluous, but inspired by the mystical creed of the Sufi. He is regarded as the most finished of the Persian lyricists, and exercised a lasting influence on the forms of Persian verses in later generations. His tomb, a little to the N. of Shiraz, is still visited by pilgrims. A prose Eng. trans. of the *Diwan*, by H. Wilberforce Clarke, was published in 1891.

Hagar. Egyptian handmaid to Sarai, by whom Abraham became the father of Ishmael (Gen. 16). Sarai's jealousy caused her to flee with her son to the wilderness, where, in a vision, she learnt the future of Ishmael. She returned to Abraham, but at a later date was finally sent away, and afterwards married her son to an Egyptian woman (Gen. xxi, 9-21). *See* Abraham.

Hagen. Town of Germany, in Westphalia. It is 15 m. N.E. of Elberfeld, and 44 m. N.E. of Cologne, standing at the union of two little rivers, Volme and Ennepe. It is on the Westphalian coalfield, and is an important rly. junction. Its industries are chiefly the making of iron and steel; there are also woollen, cotton, paper, and tobacco factories. Pop. 88,605.



Hagar awaits the death of her son Ishmael in the wilderness

After the painting by Jean Murat

Hagenau. Town of France, in Alsace-Lorraine. It stands on the Moder, 18 m. N. of Strasbourg. It was fortified by Barbarossa in the 12th century, and the palace which he built there remained until destroyed by the French in 1678. The centre of a hop-growing dist., the industries include wool-spinning and the manufacture of porcelain stoves. The town became a free imperial city in 1257. The principal church is that of S. George, dating from the 12th century, and containing a great wooden figure of Christ (1488). Hagenau passed to France by the treaty of Westphalia (1648), becoming German in 1871, and once more was transferred to France after the Great War. Pop. 18,868.

Hagenbeck, CARL (1844-1913). German dealer in wild animals. He was born at Hamburg, the son



Carl Hagenbeck.
Dealer in wild
animals

of a fishmonger who started a small menagerie, afterwards trading in wild beasts. At his death his son succeeded him in the business, and his energy and enterprise made it the largest in

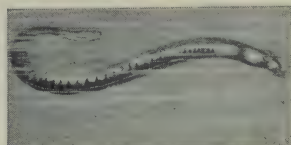
the world. A skilled trainer of animals, he was the first to exhibit performing Polar bears. He started the Zoological Gardens at Stellingen, near Hamburg, in 1897, and introduced the system of displaying wild animals out of doors. The food restrictions enforced during the Great War made it increasingly difficult to keep the animals alive, but the gardens were not finally closed until October, 1920. See Zoological Gardens.

Hagerman Pass. Lofty mountain track over the Rocky Mts. of Colorado, U.S.A. It is on the line of the Colorado Midland Rly., and reaches an alt. of 11,535 ft.

Hagerstown. City of Maryland, U.S.A., the co. seat of Washington co. It is 80 m. W. by N. of Baltimore, and is served by the Baltimore and Ohio and other rlys. The chief buildings are Kee Mar women's college, a public library, and a hospital; and the industries include the manufacture of carriages, motor vehicles, bicycles, furniture, boilers, flour, silk, and fertilisers. In the neighbourhood is Gettysburg. Settled about 1740, Hagerstown was incorporated in 1791. Pop. 26,125.

Hag-fish or **HAG** (*Myxine glutinosa*). Order of marine animals belonging to the lamprey group. In appearance they resemble

small round eels, but have no side fins and no lips. They have teeth on the tongue and palate, and



Hag-fish, species of lamprey found on the coasts of Britain

tentacles on the head, which seem to assist them in boring their way into the bodies of the fishes on which they feed. They are eyeless, and secrete a remarkable amount of thick slime. The common hag-fish is found on the British coasts, and is occasionally 2 ft. long. These animals are not true fish, and are separately classed by zoologists as Cyclostomata, round-mouthed.

Haggai. One of the minor prophets. He returned from the Babylonian captivity with Zerubabel, and began to prophesy in his old age. His short book in two chapters is homely in style and contains four prophecies, all belonging to the same year, and designed to encourage the people in rebuilding the temple. It was written, according to his own statement, in the second year of the reign of Darius Hystaspis (520 B.C.).

Haggard, SIR HENRY RIDER (b. 1856). British novelist and agricultural economist.



H. Rider Haggard

Russell

published his first work, *Cetewayo* and *His White Neighbours*, in 1882. South Africa figures prominently in his novels, the success of which is due largely to the author's exceptional narrative and descriptive power.

In addition to *King Solomon's Mines*, 1885, his most successful adventure story, and *Jess*, 1887, perhaps his best work, his novels include *Dawn*, 1884; *The Witch's Head*, 1885; *She*, 1887, in which mystery is blended with adventure; *Allan Quatermain*, 1887; *Maiwa's Revenge*, 1888; *Col. Quaritch*, V.C., 1888; *Cleopatra*, 1889; *Allan's Wife*, 1890; *Eric Brighteyes*, 1891; *Nada the Lily*, 1892; *Montezuma's Daughter*, 1893; *Joan*

Haste, 1895; *The Heart of the World*, 1896; *Lysbeth*, 1901; *Stella Fregelius*, 1904; *Ayesha*, 1905; *Fair Margaret*, 1907; *Red Eve*, 1911; *When the World Shook*, 1919; and *The Ancient Allan*, 1920. In 1891, with Andrew Lang, he wrote *The World's Desire*.

Sir Rider Haggard, who was knighted in 1912, also became prominent as a practical farmer and an agricultural economist, his journeyings through England in 1896-98 to investigate rural conditions resulting in a most valuable work, *Rural England*, 1902. His agricultural treatises also include *Reports on Salvation Colonies*, 1905; *The Poor and the Land*, 1905; and *Rural Denmark*, 1911. After the war he visited every part of the British Empire, in connexion with the settlement of ex-servicemen.

Haggerston. Suburb of N.E. London. Mentioned in *Domesday* as *Hergotestane*, and once a hamlet in the parish of S. Leonard's, Shoreditch, it is covered with factories and artisan dwellings, and stretches from the N. side of Hackney Road to Dalston, and from Kingsland Road on the W. to London Fields. Goldsmith Square, S. of the Regent's Canal, is a public recreation ground. There are several almshouses founded by city companies. Near the Hackney Road is the Great North-Eastern Hospital for Children, built 1868. Of the churches, S. Augustine's dates from 1867; S. Columba's from 1868; and S. Chad's from 1869. Nichols Square was named after John Nichols the antiquary. Halley, the astronomer, was born in Haggerston. The district is well served by the N.L.R. from Broad Street, and by buses and trams.



Haggerston. Interior of the church of S. Columba

Haggis. Ancient Scottish dish, supposed to have been adapted from the French. The stomach of a sheep having been thoroughly washed and allowed to soak for several hours in cold salt water, scalded in boiling water, and then scraped with a knife, is used as a bag into which the ingredients are placed. The chief ingredients are the heart, liver and lungs (pluck) of a sheep. Having been drained, boiled and trimmed, half of the liver is grated and the rest of the ingredients are finely minced.

For a meal intended for eight persons there are added 1 lb. of finely shredded suet, two chopped onions, half a pint of oatmeal or $\frac{1}{2}$ lb. of toasted and crumbled oatcakes, two teaspoonfuls of salt and one of pepper, half a nutmeg (grated), a grain of cayenne, half a pint of good gravy, and the juice of a small lemon. The ingredients are put into the prepared bag—care being taken that no thin parts of the bag are left, and that allowance is made for swelling—carefully sewed up, plunged into boiling water and boiled gently for three hours, being pricked with a needle occasionally during the first half-hour, and then served hot without sauce or gravy. Burns, in his poem, *To a Haggis*, describes the dish as "great chieftain o' the puddin' race." Cookery books give directions for variant forms, e.g. English haggis, lamb's haggis, mutton haggis, and Kew mince or royal haggis.

Hagi. Town of Japan, on the island of Honshu. Situated near the S.W. extremity of the island, 50 m. W. of Hiroshima, it is notable as the seat of the daimos of Chosu, who were largely instrumental in crushing feudalism. Pop. 25,000.

Hagiography (Gr. *hagios*, holy; *graphein*, to write). General term for sacred writings, or for biographies of saints. Of related words hagiographa, of frequent use in the early Church, was applied by the Jews to the Psalms, Proverbs, Job, Ezra, Esther, Chronicles, Solomon's Song, Ruth, Ecclesiastes, Nehemiah, Lamentations, and Daniel, books not read publicly in the synagogues. Hagiocracy means a priestly hierarchy, hagiolatry the worship or invocation of saints. See Saint.

Hagiology (Gr. *hagia*, holy things; *logos*, account). Term applied to literature dealing with the saints of the Christian Church. It includes all the martyrologies and biographies of saints and martyrs. The Roman martyrology contains about 3,000 names. The Eastern lists are also very lengthy, and to these must be added the long

list of local saints whose memory is only preserved in their own country. Cornwall and Brittany, for example, commemorate early saints of whom hardly anything is known.

The earliest attempt at a hagiology is that of Eusebius, The Assembly of the Ancient Martyrs. In the Greek Church, the hagiologies or menologies date from the 9th century. The first attempt at a criticism and revision of the hagiologies of the Western Church was made by the Flemish Father Rosveyde (d. 1629). His researches led to the compilation of the *Acta Sanctorum* and the establishment of the Bollandists (*q.v.*). See Martyrology; Saint.

Hagion Oros, GULF OF. Opening of the Aegean Sea. It lies between the peninsula of the same name and that of Longos, the easternmost and central prongs of the Chalcidic peninsula in Macedonia. It is also called the gulf of Monte Santo, and is about 20 m. in length, and 15 m. in breadth at its widest. The peninsula of Hagion Oros is also named the Athos peninsula, because Mt. Athos stands on it.

Hagonoy. Town of Luzon, Philippine Islands, in the prov. of Bulacán. It stands on Manila Bay, 10 m. W. of Bulacán, and has alcohol, textile and fishing industries. Pop. 22,000.

Hague, THE (Dutch, 'S Graven Hage or Den Haag). Capital of the kingdom of the Netherlands. The



Hague capital also of the prov. of S. Holland, lies in flat country, in parts sandy, but pleasant and well-tilled, about 14 m. N.W. of Rotterdam and $2\frac{1}{2}$ m. from the North Sea at Scheveningen. The city is attractively laid out, with broad streets and pleasant squares, in orderly but not monotonous arrangement. There are two large rly. stations and good tramway services. As the capital, The Hague is the residence of the royal family, and the seat of the legislative and central judicial bodies of the country. Its chief industries are printing works, distilleries, furniture and earthenware works.

The central point of the city is the Plein, near which stand the buildings of the supreme court, the ministries of war, justice, and the colonies, and the Mauritshuis, erected between 1633-44 and rebuilt 1704-18, in which is housed the famous collection of pictures made by the successive princes of Orange. Close by is the Binnenhof, a group of buildings round a

square, where are the Hall of the Knights, used by the chambers in joint session, and the halls in which the first and second chambers sit. The Gevangenpoort, overlooking the ornamental water known as the Vyver, is a large medieval tower formerly used for prisoners.

The town hall, originally built about 1565 and restored in the middle of the 17th century, is a highly characteristic Dutch building of its period. The most notable churches are the Nieuwe Kerke, dating from the middle of the 17th century, where lie the remains of the De Witts (*q.v.*) and formerly lay those of the philosopher Spinoza; and the Groote Kerk, a 15th century Gothic building, with a lofty tower and ironwork spire and a finely carved 16th century pulpit.

The royal palace, an 18th century edifice enlarged during 1816-17, stands on the Noordeinde and has extensive private gardens behind. To the N. of this lies the pleasant open space of the Willems Park, the heart of the fashionable quarter of the city, with the large national monument, erected in 1869 to commemorate the achievement of national independence in 1813. Other places of interest are the Steengracht Gallery, the municipal museum, the royal library, the Mesdag Museum, and the museum of industrial art.

To the N.E. of the town lie the zoological gardens and the beautiful Haagsche Bosch; the latter, a large wooded park in parts quite wild, contains the royal villa known as the Huis ten Bosch, built about 1645, in which the first international peace conference met in 1899. The Palace of Peace, built largely at the expense of Andrew Carnegie on the designs of the French architect, L. M. Cordonnier, to house the international peace conferences and the court of arbitration, was opened in Aug., 1913.

In history The Hague has enjoyed the advantages of its isolated position in the Low Countries, and has enjoyed comparative tranquillity. Its origins are traced to a hunting seat of the counts of Holland, c. 1250, which gradually became their regular residence towards 1280. From the last decade of the 16th century The Hague was the political centre of the states general of Holland, which gave it increased importance; the murder of the De Witts in 1672 was a terrible episode in its peaceful history.

In 1795 the French revolutionary armies captured the city, and the Batavian republic was set up. It remained in French possession until Nov., 1813. Even as late as



The Hague. 1. The Vyver, an ornamental water in the centre of the city, with part of the Binnenhof on left. 2. The Palace of the Queen, with statue of William the Silent, by Count Nieuwerkerke, 1845. 3. The Huist en Bosch, built 1645. 4. The Mauritshuis, rebuilt 1704-18, containing the famous picture galleries. 5. The Hall of the Knights, in the Binnenhof, meeting place of the Dutch chambers

1806 The Hague only held the status of a village, when Louis Bonaparte raised it to that of a town.

Apart from the modern Hague conferences, The Hague has long been an important centre of diplomacy, and has given its name to several treaties. Among the most important are the alliance of England, Sweden, and the Netherlands, 1668; and the treaty between England, France, and Holland in 1717. The old-standing tradition of The Hague as a peace-making centre of the nations led

many to support its claims to be made the seat of the League of Nations, but Geneva was selected instead. Pop. 352,079.

J. E. Miles

Hague, CAP DE LA. Promontory of the Cotentin peninsula, France, in the dept. of Manche. It is at the N.W. extremity of the dept. and juts out into the English Channel, 12 m. N.W. of Cherbourg. Alderney is 10 m. W. of the point, and about 35 m. E.S.E. is the roadstead of La Hague or La Hougue.

Hague Conference. International conference held at The Hague in the interests of peace. The suggestion for a conference of this kind came from the tsar of Russia, Nicholas II, and in 1899 the first conference met, representatives from European countries and from the U.S.A. being present. The members signed three conventions. The first concerned the establishment of an inter-

national court of arbitration, known now as The Hague tribunal; the second dealt with the laws and customs of war; and the third with naval warfare. In addition it was declared that the throwing of missiles from balloons, the use of poison gases and of expanding bullets were illegal.

A second conference met in 1907, when a proposal put forward by the British Government for the reduction of armaments was rejected; but in other directions much was done. The conventions of 1899 were revised, and conclusions were reached on such matters as the rights and duties of neutral states in naval warfare, the conversion of merchant vessels into warships, the laying of automatic submarine contact mines, the bombardment of undefended towns by warships, etc. It also passed a resolution on the strength of which a conference on prize law met in London in 1908-9 and drew up the Declaration of London. Conferences of many European powers were held at The Hague in 1893, 1894, 1900, and 1904 to deal with matters of private international law—for instance, marriage. See Blockade; International Law; London, Declaration of.



The Hague. The Palace of Peace opened in 1913 as a seat for The Hague Tribunal and the peace conferences

Hague Tribunal. International court of justice established in 1899 for the settlement of disputes between one country and another. Its home is at The Hague. It arose out of the peace conference held there in 1899, when it was decided to form a permanent international court. Sixteen powers signed the agreement, which said that each power should nominate four members who should serve for six years. A dispute referred to the tribunal should be heard before five of these members, two chosen by each litigant and a fifth, as president, by the four. Between the opening of the 20th century and the outbreak of the Great War a number of cases were referred to the tribunal, among them being that of Great Britain, Germany, and Italy against Venezuela. The first members nominated by Great Britain were Lord Pauncefoot, Sir Edward Malet, Sir Edward Fry, and Professor J. Westlake. See Arbitration, International.

Hahnemann, SAMUEL CHRISTIAN FRIEDRICH (1755-1843). German physician. Born at Meissen,



Samuel Hahnemann, German physician

April 10, 1755, he became a doctor after studying at Leipzig and Vienna. He practised in Dresden and Leipzig, but his reputation as a doctor of the system of homoeopathy which he founded. His theory was first put forward in an article in 1796 and was afterwards worked out more deliberately in books, especially his chief one, 'The Organism of Rational Health.' He practised at Köthen and later in Paris, after he left Leipzig owing to the unpopularity of his theories among those whose business was affected thereby, but he had the satisfaction of seeing them widely accepted. He died July 2, 1843. See Homoeopathy; consult Life and Letters, T. L. Bradford, 1895.

Hai-cheng. Town of China, in the prov. of Fengtien. It stands on the S. Manchurian Rly., and is one of the centres of the Manchurian silk trade.

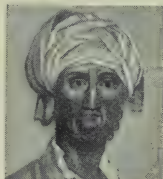
Haida (men). North American Indian tribe in Queen Charlotte Islands, British Columbia, and Prince of Wales Island, Alaska. They are divided into two matrilineal clans, Eagle and Raven; each individual has a personal totem (animal-helper). Their skillfully carved ceremonial rattles, masks, and totem poles betray Polynesian influence.



Haifa, Palestine. Town and harbour from the sea

Haidarabad. Alternative spelling for the state and cities of India, more frequently spelled Hyderabad (q.v.).

Haider Ali OR HYDER ALI (c. 1722-82). Ruler of Mysore. A Mahomedan of insignificant parentage,



Haider Ali, Ruler of Mysore

he entered the service of the raja of Mysore in 1749, where his strong personality soon placed him at the head of affairs. In 1763 he conquered Kanara, and the wealth thus attained completely turned his head. In alliance with the nizam of Madras he fought the British at Chengam, 1767, and was signally defeated. Persisting in hostilities, he succeeded in 1769 in effecting a treaty with his victors, but was unable to induce them to help him in his campaign against the Maharattas in 1772. In revenge for this he took advantage of the war with France to march on Madras, 1779, but after some initial successes was routed by Sir Eyre Coote in an engagement near Porto Novo. He died at Chittore.

Haiduk. Hungarian word given to a certain class of outlaws in Turkey and other Balkan countries, e.g. Serbia. It meant originally robber, but in Hungary it came to refer to mercenary soldiers. Early in the 17th century these received a grant of land on the left bank of the Theiss, which was then called the Haiduk district. It was also used for the retainers of the Hungarian landowners. One theory is that the word was first given to some Turkish outlaws who took refuge in Hungary.

Hai-Dzung. Town of Tongking, French Indo-China. It is situated in the Song-ka delta region, 32 m. E.S.E. of Hanoi, the capital. Pop. 8,000.

Haifa, KHAIFA OR HEPHA. Town and seaport of Palestine, the ancient Sycaminum. An important place, with a harbour that is the best natural haven in Palestine, it lies on the Bay of Acre, under Mt. Carmel, and is connected by rly. with the Central Palestine and Damascus lines. It has a considerable and increasing trade, and cotton is grown locally. Haifa figured in the Crusades. During the Great War it, with Acre, was occupied by the British, Sept. 23, 1918. Pop. 20,000.

EARL HAIG OF BEMERSYDE

H. W. Wilson, Military Critic of The Daily Mail

In this work are accounts of all the great battles directed by Haig. See Arras; Bapaume; Cambrai; Messines; Somme, etc. See War, Great, and the biographies of Byng; Foch; French; Joffre; Plumer, and other generals. Also Cavalry; Tactics

Douglas Haig, 1st Earl of Bemerseyde, was the youngest son of an ancient Fife family, and was born June 19, 1861. He was educated at Clifton and Brasenose College, Oxford, whence he went to Sandhurst, and was gazetted in 1885 to the 7th Hussars. He was distinguished both as polo player and as a serious student of his profession. He was a good linguist, and passed through the Staff College.

Haig served in the Khartum campaign of 1898 and in the South African War, where his work attracted attention. He acted as chief of staff at Colesberg in 1900 to Sir John French, and in 1901-2 he commanded a group of columns

under Lord Kitchener. All the reports on him predicted a great future and laid stress on his qualities of leadership. After the South African War he served (1903-6) in India, first as inspector-general of cavalry, and then, after some years at home, during which he was director of military training (1906-7), and director of staff duties at headquarters (1907-9), as chief of staff to the Indian Army (1909-12). On his return to Europe he was appointed to the Aldershot command, which he held till the outbreak of the Great War.

He went to France in Aug., 1914, with the expeditionary force in command of the 1st corps, and



Bazzano

took part in all the earlier battles, passing in Jan., 1915, to the command of the 1st army. In Dec., 1915, he succeeded Sir John French as commander-in-chief of the British forces in France, and held this position till the close of the war. On Jan. 1, 1917, he was promoted field-marshal; and in 1919 he was created earl and received a grant of £100,000 from the nation. He married in 1903 the Hon. Dorothy Vivian, daughter of the 3rd Lord Vivian, and a son and heir was born to him in March, 1918. His two daughters were born in 1907 and 1908.

Haig, like Pétain, had the gift of calm and resolution in the darkest hours, and he was by nature an optimist. In Feb., 1917, in an interview, he confidently predicted an early victory of the Allies, and this pronouncement was much criticised at the time, though but for the unexpected collapse of the Russians all his hopes should have been fulfilled. He was constitutionally shy, another point in which he resembled Pétain, and he could never address his troops, and was indeed little seen by them.

Haig. F.M.

In the crisis of the first battle of Ypres (Oct. 31, 1914), when all seemed to be giving way, he was suddenly seen riding down the Menin road under a heavy fire, perfectly appraised with a perfectly turned-out escort, behaving in that emergency with an unruffled calm which had an electrical effect. Under his eyes the line was re-formed, the 2nd Worcesters stormed and recovered Gheluvelt, and Ypres was saved.

In the battle of Loos (Sept. 25, 1915) he commanded the 1st British army, which delivered the principal attack, and was criticised for the failure to throw in the reserves promptly and for the small results obtained. Such mistakes were probably inevitable until experience in large scale warfare had been gained; before 1914 no British general had handled more than 30,000 men in a body, and at Loos some 250,000 were engaged.

After Haig received the command in France, he had to prepare,

in conjunction with Joffre, the plans for a great offensive in 1916 on the Somme front. The policy contemplated was attrition, as at that date there were no means of delivering a surprise attack or of turning the enemy's position. The plan as adopted was not Haig's; he had wished to attack the formidable Beaumont-Hamel ridge from the N. and from Arras, but, owing to difficulties of cooperation, the French were against this. Haig's thoroughness of organization was seen in the admirable completeness of the preparations for this attack, which involved enormous engineering work. The losses of the British in the Somme battles were terrible (400,000), but the Germans suffered as severely. No decisive blow could be inflicted till the German reserves were exhausted, and the artillery preparation required at that date to cut wire rendered the terrain almost impassable.

Successes in 1917

Haig in 1917 was required to act under Nivelle's directions, which hampered his operations, but he gained the two brilliant victories of Arras and Messines, though all his arrangements were upset by the necessity of prolonging his attack at Arras, in order to take the pressure off Nivelle, whose offensive had failed. Thus the third battle of Ypres did not open till July 31, when the good weather had gone; it involved fearful suffering and sacrifices for the troops, but it came very near being a complete victory.

The first battle of Cambrai was a remarkable success, though it could not be exploited because of the diversion of troops by the British Government to various subsidiary fields, and because of the dispatch of five divisions to Italy. Haig had been a believer in tanks, and they were to provide him with a weapon capable of restoring the factor of surprise and eliminating the prolonged artillery preparation.

In early 1918 Haig was convinced of the imminence of a great German offensive, but could not persuade the British Government of the soundness of his view. His removal from the command was considered, but fortunately was not carried out. He was left with infantry effectives 114,000 below strength, nor could he induce the home authorities to send him reinforcements from Palestine and the secondary fields. With his weak force, his front was extended 28 miles in Jan., to the Oise; and owing to his lack of men he was compelled to station his reserves north of the Somme. When the German offensive

was opened (March 21, 1918), he could not throw in these reserves quickly, but, though disastrous loss was inflicted by the rapid German advance in overwhelming strength, his dispositions were generally justified and the attack was not fatal.

When Haig took the offensive on Aug. 8, 1918, notwithstanding the loss of 464,000 men which the British army had suffered during the German offensives, he handled his troops, now heavily but tardily reinforced from home and from subsidiary fields, with brilliant skill. From that hour he pressed the Germans fiercely and unrelentingly, and won such a series of victories against forces not inferior in strength and commanded by the most experienced soldiers, as no general had gained in the war. His order of Aug. 1, 1918, stating that the crisis had passed, was marked by deep insight, though its correctness was doubted in London.

The Final Victory

His assault on the Hindenburg line (Sept. 27-Oct. 1) was the greatest feat in his career, undertaken as it was against the judgement of the British War Cabinet, which dreaded a repulse and heavy casualties, when Foch himself was reluctant to order it. Its triumphant success in the face of enormous difficulties was one of the main factors in bringing a speedy end of the war. So uncertain was the home government as to the position that it did not venture to congratulate him and his army until Oct. 7, when the end of the war was now manifestly in sight. His faith and courage at that decisive moment place him high among the leaders of men.

He was not a showy commander and he had minor defects, but Sir F. Maurice states the truth when he says that this "great leader's calm judgement, coolness in adversity, unselfish patience when unsupported at home, and bold decisions when the time came to be bold, were vital factors in our triumph." He led to the most terrible war in history by far the largest British forces which have ever taken the field, and by sheer strength of character and determination he played the leading part in the 100 days of almost continuous battle which brought the war to so glorious a close. Though many had doubted the capacity of the Allies to meet the Germans in a war of movement, he shone in this, which was one of the severest tests of generalship.

Earl Haig received many honours during and after the war. In

addition to holding the high rank of G.C.B. and G.C.V.O., he was made a Knight of the Thistle in 1917, and awarded the Order of Merit in 1919. He received decorations from every nation of the Allies, including the American Cross of Honour, 1918, and the Knight Grand Cross of the Order of S. Maurice and S. Lazarus, 1916. He was given honorary degrees by several British universities, and was elected lord rector of St. Andrews University in 1916. He received the freedom of over a score of British cities and towns. During 1919-20 he visited most parts of the kingdom unveiling war memorials, and delivering speeches on behalf of disabled ex-officers and men, in whom he took the keenest interest. Early in 1921 he paid a visit to S. Africa to attend an empire conference on ex-service men. See *Cavalry Studies, Strategic and Tactical*, D. Haig, 1907; *Despatches*, Dec., 1915-April, 1919, ed. J. H. Boraston, 1919; Sir D. Haig's Great Push: the Battle of the Somme, H. N. Williamson, 1917.

Hail. Balls of ice of complex structure which fall usually from cumulo-nimbus clouds during a thunderstorm. They may exceed a pound in weight and three inches in diameter. Raindrops are sometimes carried upward by the ascending air currents which occur during the development of thunderstorms. If carried sufficiently high they freeze, and any subsequent upward movement causes condensation and subsequent freezing of moisture until the ball is composed of several concentric layers of ice. If the ball suffers alternate risings and fallings these layers become more definite. Finally when the ball is too large to be carried by the ascending currents the hail falls.

Hail is necessarily hard and compact and is usually tough enough to retain its shape after collision with the ground. Consequently, hail does serious damage to fruit trees, growing crops, and glass.

Hail. Town of Arabia, the capital of the emirate of Shomer or Shammar. It is situated about 250 m. N.E. of the sacred town of Medina. Pop. 10,000.

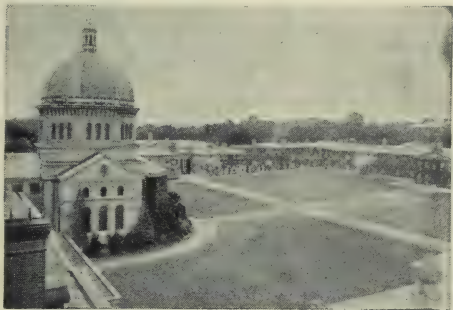
Hailes, DAVID DALRYMPLE, LORD (1726-92). Scottish lawyer and historian. Born in Edinburgh, Oct.



Lord Hailes,
Scottish lawyer
After Seton

28, 1726, he was the eldest son of Sir James Dalrymple, Bart., of Hailes, and a descendant of Viscount Stair. Educated at Eton and Utrecht, he became a lawyer. After a successful career as an advocate, he was made a judge in 1766, taking the title of Lord Hailes. He died Nov. 29, 1792. Leaving no sons, his baronetcy passed to his nephew, and his estates to the family of Ferguson, into which his daughter married. Lord Hailes was friendly with Johnson, Burke, and Horace Walpole. A stout believer in Christianity, he replied to Gibbon's strictures on that faith, and wrote much on historical and antiquarian subjects. His chief work is *The Annals of Scotland*, a bold chronological outline of Scottish history, 1057-1371, but scrupulously fair and accurate. Hailes is a village in Haddingtonshire, 4 m. from Haddington. It stands on the Tyne, and has a ruined castle.

Haileybury College. English public school. It was founded in 1862, and took over the college at Haileybury, near Hertford, maintained by the East India Company from 1806 until its dissolution. It is a Church of England school and is governed by a council. Divided into three sections, upper, middle, and lower, it has classical and modern sides and gives several scholarships. The boys, about 500 in number, live in ten houses, but take their meals together in the college, except a few who are in a boarding-house proper. During the Great War, 2,814 old Haileyburians served with H.M. forces, of whom 566 lost their lives, and the list of honours included four Victoria Crosses.



Haileybury College. Quadrangle of the famous Hertfordshire public school.

Hailsham. Market town and parish of Sussex. It is 7 m. N. of Eastbourne and 54 m. from London and has a station on the L.B. & S.C. Rly. The chief building is S. Mary's Church, a Perpendicular building. The town has a trade in agricultural produce, cattle and sheep markets, and one or two manufactures. Near is Michelham, a residence which was once a monastic house. Market day, Wed. (alternate). Pop. 4,600.

Hainan. Island S. of China, separated from Kwangtung prov. by a narrow strait. Kiangchowfi is the capital, and Hoihow the chief port. The centre of the island is mountainous, with peaks rising to 7,000 ft. Chinese inhabit mainly the coast line; in the interior aboriginal tribes, known as Sai or Li, maintain a semi-independent existence. Rubber is produced and tin exported, but the mine is still worked by native methods. Area 13,900 sq. m. Est. pop. 1,500,000.

Hainault or **HAINAUT.** Prov. of Belgium, formerly the county of Hainault. It is bounded by the irregular line of the French frontier, and by the provinces of W. and E. Flanders, Brabant, and Namur. The prov. is hilly in parts, especially round Renaix, and in the district known as the Borinage, round Mons. The Schelde, Sambre, Dendre, and Haine are the chief rivers. The seat of the provincial administration is Mons, and the other important towns are Charleroi, Tournai, Thuin, Lessines, Ath, Leuze, Enghien, Jumet, La Louvière, Chimay, Soignies, and Wasmes.

Hainault contains one of the chief industrial areas of Belgium, the rich coal and steel districts centring on Mons and Charleroi. In the N. it is mainly agricultural, cereals and beetroots being important crops; quarries and glass-works are also notable. There are numerous rly. lines in all directions, and the artificial waterways, the Mons-Condé canal and the canalised Sambre with its water connexion to Brussels from Charleroi, are the main outlets to France. The prov. is intimately connected with the coalfields and industries of N.E. France. The inhabitants are almost entirely French-speaking Walloons. Area, 1,437 sq. m. Pop. 1,214,093.

As an independent county, Hainault was of some importance in earlier times. The first of the long line of counts of Hainault was Reginar I (d. 916), who took part in the acquisition of Lorraine by Charles III of France. His descendant, the countess Rachilda, married Baldwin VI of Flanders, c. 1040, which brought Hainault into

close relationship with its northern neighbour. At the end of the 13th century count Jean d'Avènes (1279-1304) inherited also the county of Holland, which was united with that of Hainault, until the latter fell to Burgundy, after which its history is knit with that of the Netherlands. Hainault was occupied by the French revolutionary armies in 1794, amalgamated with the Netherlands in 1814, and finally incorporated with the kingdom of Belgium in 1830. See Belgium; Netherlands.

Hainault Forest. Open space in Essex, England. Lying to the S.E. of Epping Forest (*q.v.*), it formed part of the ancient Forest of Waltham, of which all of the 4,000 acres remaining, except Crabtree Wood, near Chigwell Row, were disafforested in 1851-52. The name Hainault Forest is now applied to 805 acres (551 arable land and 245 acres forest) acquired for the public in 1903 at a cost of £21,830, and opened July, 1906. It is the largest open space under the control of the London County Council. Fairlop Fair, held in July, 1725-1852, was held about 1 m. E. of Chigwell Row under or near a famous oak known as Fairlop Oak, destroyed by a gale in 1820, and from which were made the pulpit and reading desk in S. Pancras Church, Euston Road, London.

Hainburg or **WEISSES LAMM.** Town of Austria. It stands on the right bank of the Danube, 27 m. E.S.E. of Vienna, and near the Hungarian frontier. It is a picturesque place surrounded by old walls, and on the top of the Schlossberg (950 ft.) are the remains of a castle mentioned in the Nibelungenlied. It was a Hungarian border fortress until 1042, when it was taken by the emperor, Henry III. On the Wiener Tor is a statue traditionally said to be that of Attila. Between Deutsch-Altenburg (Goldenes Lamm) and Petronell are remains of the Roman station of Carnuntum (*q.v.*), including an amphitheatre. Pop. of dist., 15,200.

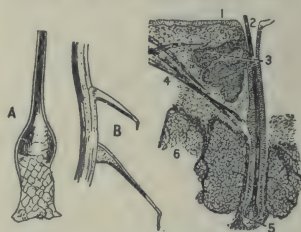
Haiphong or **HAI-FONG.** Seaport of Tong-king, French Indo-China. It stands on the right bank of the Kua-Kam, a tributary of the Song-ka, 60 m. from Hanoi, its port. The new French residential quarter is well laid out, with broad streets and boulevards. Cotton milling is one of the leading occupations. It is a French naval station, having rly. communication with Hanoi, and a brisk trade with Hong Kong. Pop. 18,500.

Hair. Outgrowth or development of the skin characteristic of all mammals. It includes not only fur and hair like that of the human

body, but also the bristles of the pig, the vibrissae or whiskers of the cat, and the spines of the hedgehog and porcupine. Its object is to keep the body warm, mammals like the whales, which have little hair, being provided with a thick layer of fat beneath the skin.

Each hair is developed in a little follicle or pit in the skin, and grows from a papilla or small bulb at the base of the follicle. When the hair falls off, or is pulled out, another is developed from the papilla. Permanent baldness is due to the atrophy or destruction of these papillae. The body of the hair is covered with minute scales, and forms a kind of tube containing pigment or colouring matter. The white or grey hair of old age is due to the failure of pigment and its replacement by air.

Each hair follicle is provided with sebaceous glands, which secrete an oily liquid for the purpose of lubricating the hair. It has also a tiny muscle by which the hair can be erected. This is very efficient in some animals, as the common cat, but in the human species it acts but feebly, the phenomenon of the hair "standing on end"



Hair. Left, of stinging nettle; A, large hair; B, smaller hairs with broken tips, growing from veins. Right, human hair; 1, epidermis; 2, mouth of hair follicle; 3, sebaceous follicle; 4, arrector pili muscle; 5, papilla of hair; 6, adipose tissue

being rare. The curious sensation known as "goose skin" is due to the contraction of these small muscles. The hair is constantly being shed and regrown, and it is believed that the entire hair of the human head is renewed every three or four years. Baldness may be due to actual disease, want of general tone in the skin, or to hereditary tendency. The wearing of unventilated hats is a common cause of the trouble.

Most mammals are entirely covered with hair. This is true of the human species, the only absolutely hairless regions being the palms of the hands and the soles of the feet. In some forms hair is a secondary sexual characteristic, as the beard of the man and the mane of the lion and male baboon. The colour of the hair in many animals

serves a protective purpose in making the creature resemble its surroundings; this is well seen in the arctic fox, mountain hare, and ermine, which turn white in winter to match the snow, and in the stripes and spots in many animals.

Differences of quality in the hair are characteristic of local varieties of the human species. The hair of negroes is crisp or woolly; of Mongolians coarse and lank; of the Australian aborigines curiously crinkled; of the Caucasian races usually glossy and wavy. Speaking broadly, the Latin races have black hair, while the Teutonic races tend to be fair.

Hair Brush. Small brush for the hair. The best brushes are made of bristle, bent double and drawn through holes in the flat stock, a wire running through all the bent heads to keep them in place. This forms the back of the brush. *See Brush.*

Hair-brush Grenade. Heavy hand grenade so named from its external resemblance to a hair brush. During the early stages of the Great War a number of hair-brush grenades were improvised by using a base board, to which was attached a slab of wet guncotton covered with nails.

At a later stage of the conflict well-constructed hair-brush grenades were brought into use. The explosive, ammonal or amatol, is placed in a tin box about 5 ins. long by 3 wide, and 2 ins. high, on top of which is a grooved cast-iron plate nearly $\frac{3}{8}$ in. thick, these components being fastened to the base-board by two metal straps. Ignition is effected by a length of safety fuse carrying at one end a detonator embedded in the explosive, and at the other a percussion cap in a special holder. This holder, which is also secured to the base-board, carries a spring-loaded plunger, and the latter is held away from the cap by a safety pin passing through its rear end. When the pin is withdrawn the cap is fired and the safety fuse ignited. *See Ammunition; Explosives; Hand Grenade.*



Hairstressing. Classic styles from which subsequent fashions have developed. Top three rows, Greek; 4th row, first head Greek, remainder Etruscan; 5th row, Roman

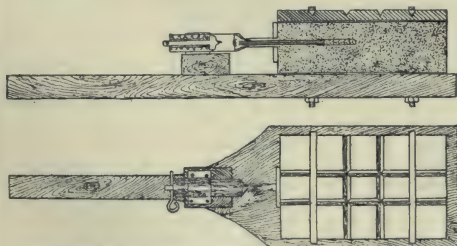
From Costumes of the Ancients, Thomas Hope

Hairstressing. Method of arranging and ornamenting the hair. The hair has been the object of special attention in all ages and among all nations, savage and civilized. Among savages have been found the styles of frizzing so that the hair stands out from the head in a great ball;

kernels, beads, and quills are also used as ornaments.

The Chinese custom of shaving the head except on the crown, from which hangs a long pigtail, is gradually being abandoned in favour of short hair. Some Moslems still shave their heads excepting for a tuft on top which, as a handle, is to help them into Paradise after death. Japanese ladies make their hair very satiny and draw it over cushions to a knot at the back. Ancient Britons and Saxons wore long hair, and Saxon ladies twisted their locks and curled them with an iron.

The Normans introduced the short cut into England, and from that time fashion has swung from one extreme to another, the most absurd being the late 18th century style of erecting two or three feet of tow upon the head, covering it



Hair-brush Grenade. Diagram showing this grenade in plan, and, above, in section

with the wearer's hair, thickly greased and powdered, and adorning the pile with false curls, jewels, feathers, and flowers. The Carolean custom of wearing enormous wigs was almost as absurd.

False hair, dyes, and pomatums have been in use through the ages; Roman ladies scattered gold dust on their heads; Mary Queen of Scots ordered false additions to her hair while in prison; Pepys's wife began to wear flaxen hair in middle life. See Barber.

Hairedin Barbarossa. Turkish battleship sunk by a British submarine in the Sea of Marmora, Aug. 9, 1915. She was sold to Turkey in 1910, after 16 years' service in the German fleet as the *Kurfürst Friedrich Wilhelm*. Strongly protected with armour, upon a hull 354 ft. long and 64 ft. in beam, she carried six 11-inch guns in turrets, 20 smaller weapons, and two torpedo tubes.

Hair Grass (*Aira caespitosa*). Perennial grass of the natural order Graminae. Widely distributed in temperate and cold climates, it has flat, rough, tough leaves, and shining brown or purplish flower spikelets. Its stems attain a height of 4 ft. or 5 ft., and the plant forms thick tussocks in wet places. The herbage is too coarse for agricultural or grazing purposes.

Hair Moss (*Polytrichum commune*). Large moss of the natural order Bryaceae. A native of all temperate regions, it has awl-shaped leaves with toothed edges, set closely around the stiff, plant stem, which ends in the so-called flower (sexual organs), or in the long-stalked spore-capsule (sporangium) covered by its thatch-like cap (calyptra). The dried plants are used for stuffing pillows, and for making dusting brushes.

Haiti, HAYTIR SANTO DOMINGO. Island in the W. Indies, one of the Greater Antilles, second only in size to Cuba. The Mona Passage separates it from Porto Rico on the E. and the Windward Passage from Cuba on the W. The Atlantic washes its northern shores and the Caribbean Sea its southern. Haiti is 400 m. long and from 60 m. to 160 m. broad; its area is 29,536 sq. m., nearly the size of Ireland. It is politically divided into two republics—Haiti on the W. and Santo Domingo (*q.v.*), or the Dominican Republic, on the E.

Haiti is extremely fertile, lofty, and heavily forested, mountain ranges alternating with rich valleys, watered by numerous rivers, and diversified by plains and extensive lakes. Several mountain ranges traverse the island longitudinally, the loftiest peak being



Haiti. Map of the West Indian island containing the republics of Haiti and Santo Domingo

Loma Tina in the N.W. (alt. 10,300 ft.). Between the mountains of the N.W. is a broad, fertile tableland called the Vega Real or royal garden, intersected by several large streams. The principal rivers are the Artibonite, rising in the mountains of the N.W. and discharging into the Bay of Gonâves; the Yuna, flowing E.; the Yaqui del Norte, flowing N.W.; and the Yaqui del Sur, flowing S. The largest lakes lie in the S. and S.W. portions of the island. In the E. is a series of *llanos* or *praderas*, valleys or plains.

The climate is very hot and humid, especially on the plains, and is unsuited to Europeans. The rainy season begins in May and lasts generally until the end of October, but sometimes well into November;



Hair Moss. Stems and spore-capsules rising from the foliage

the best months are from April to June. Occasional hurricanes occur during the wet season.

The chief products are coffee, cocoa, cotton, tobacco, hides and skins, gum, honey, sugar, and rum. Cattle-breeding is neglected. In the dense forests of the mountainous regions many valuable woods are obtained, notably mahogany, lignum-vitae, and dye woods. The minerals include gold, silver, copper, tin, iron, nickel, gypsum, kaolin, porphyry, and limestone.

Haiti was first touched by Europeans on Dec. 6, 1492, when Columbus landed on its shores. He named it Hispaniola, and four years later colonists from Spain founded the city of Santo Domingo.

A succession of sanguinary conflicts led to the extermination of the aborigines, and within a generation scarcely any of them survived, thousands of negro slaves being shipped from Africa to take their place. In the 17th century French buccaners, who had made

the island of Tortuga their haunt, settled on the shores of the Bay of Gonâves, and in 1697, at the peace of Ryswick, the W. portion, amounting to nearly one-third of the island, was ceded to them. In 1791 the negroes, who had largely increased in numbers, revolted and overthrew their cruel taskmasters, the result being that two years later the emancipation of the blacks was decreed by the French Convention.

Haitian Independence

Under Toussaint l'Ouverture (*q.v.*), a negro of ability who had been made military chief, the negroes captured the remaining Spanish portion of the island, and expelled the Europeans. In 1801 an expedition was sent by France to recover her lost possession, but although they captured l'Ouverture and deported him, they could not maintain their position, and relinquished the island in 1803. The independence of Haiti was proclaimed on Jan. 1, 1804, and from 1804–6 Dessalines ruled as emperor. From 1809–21 the Spaniards recovered possession of the E. end of the island, but the negroes again revolted, and the E. and W. portions were joined together as the republic of Haiti until 1844, when the Dominican Republic was established. Since that time the history of Haiti, with its two little republics, has been marked by political confusion and a succession of revolutions between the negroes and half-breeds. See Santo Domingo.

Haiti. Republic embracing the W. portion of the island of Haiti, in the W. Indies. Area 10,204 sq.



Haiti, arms of the republic

m. Although smaller in area, it is more important than the republic of Santo Domingo on the E. The coastline is greatly indented on the W. by the Bay of Gonâves, lying between two mountainous peninsulas, and at the head of the bay lies Port au Prince, the capital. Several islands lying off the coast are subject to this republic—



Haiti. Group of officers and soldiers in the service of the Negro republic

the chief being La Gonave, facing the capital, Tortuga, off the N.W., and La Vache, off the S.W. coast. The largest rivers are the Artibonite, navigable for nearly 100 m., the Grand Anse, and the Trois Rivières. The most extensive inland sheet of water is the Étang Saumâtre in the S.E., 60 m. in length from N.W. to S.E., and 22 m. wide.

The chief ports, besides the capital, are Port de la Paix, Gonaïves, Jacmel, St. Marc, Cap Haitien, Jérémie, Aux Cayes, and Miragoane. Torrid heat prevails on the lowlands, but the climate is more equable in the higher regions. The flora is profuse, but the fauna is limited, the largest mammal being the agouti (*q.v.*). The mineral resources are considerable, but unworked, although several concessions have been granted. Among the minerals known to exist are gold, silver, copper, tin, nickel, iron, gypsum, kaolin, limestone, and porphyry. Agriculture is the chief industry. The chief crops are coffee, cocoa, and tobacco, and the cultivation of sugar is progressing.

The constitution of the present republic dates from June 12, 1918. At its head is a president, elected for a period of four years, assisted by five secretaries of state. Legislative power lies with a Chamber of Deputies and a Senate of 15 members. By a treaty of Nov., 1915, the U.S.A. established a protectorate over Haiti. Education is free and compulsory, but it is backward in the country districts. The religion is Roman Catholicism.

An armed constabulary is maintained with officers mainly recruited from the U.S. Marine Corps. Railways are in the constructive stage, only 64 m. of

light railway being in use. A line is being laid down to connect the capital with Cap Haitien. Steamers ply to New York. French weights and measures are used. The estimated pop. is $2\frac{1}{2}$ millions, mostly negroes, but with a large number of mulattoes and about 500 of European descent. French is the official language, but the lower classes speak a *patois* known as Creole French.

In July, 1915, the United States landed a naval force and formally undertook to restore law and order, and in 1915-16 a virtual protectorate by U.S.A. over Haiti was established and ratified. The new gendarmerie has established order, armed bands range the hills and burn peaceful villages no longer; yellow fever and small-pox have disappeared, malaria is less rampant in consequence of advances in education and sanitation; roads have been built throughout the country; hospitals have been erected and staffs trained; prisons have been cleansed. Reports of unnecessary violence by the marines in putting down banditry were current in 1920-21 and are to be investigated by America.

Hai-Yang-Tao, BATTLE OF. Naval engagement in the Sino-Japanese War, Sept. 17, 1894. The Chinese admiral, Ting, fell in with the Japanese fleet under Ito off the Yalu river. Although stronger in point of armament, Ting was unable to cope with the mobility of the Japanese fast cruisers, and was utterly defeated, being forced to take refuge under the guns of Port Arthur (*q.v.*).

Hajdú-Boszörmény. Town of Hungary, in the co. of Hajdú. It stands in the midst of an agricul-

tural region, 11 m. N.W. of Debreczin, producing cattle and cereals. Pop. 16,100.

Hajdú-Szoboszló. Town of Hungary, in the co. of Hajdú. It stands in a pastoral region, 12 m. S.W. of Debreczin, and the inhabitants are engaged in cattle-rearing and agricultural pursuits. Pop. 16,000.

Hajipur. Subdivision and town of Bihar and Orissa, India, in Muzaffarpur district. Area of the subdivision, 798 sq. m. It is a fertile tract and is extensively cultivated. Hajipur town is on the Gandak, close to its junction with the Ganges at Patna, and is on the main line of the Bengal and N.W. Rly. The town contains an ancient mosque and Hindu temples. Its commercial importance is considerable. Pop. 21,000.

Hake (*Merluccius vulgaris*). Large fish of the cod family. It is fairly common around the British coasts, and especially off Cornwall, where it preys upon the pilchards. It is rarely over 3 ft. in length, and is dark grey on the back and lighter



Hake, one of the cod family, caught off the British coasts

below. The head is somewhat flattened, and there is an absence of the barbels seen in some species of the group. It is an important food fish, as its flesh is white and of good flavour.

Hake, THOMAS GORDON (1809-95). British physician and poet. He was born at Leeds, March 10, 1809, and educated at Christ's Hospital and Glasgow University. His first poem, *The Piromides*, was published in 1839, but most of his poetical work was done after the age of 50, when he had retired from medical practice. Among his poems are *Madeline*, 1871; *Parables and Tales*, 1872; *New Symbols*, 1876; *Maiden Ecstasy*, 1883. His poems won the enthusiastic praise of his friends the Rossettis, but though original in conception, they are very unequal and often obscure. Hake wrote an autobiography, *Memoirs of Eighty Years*. He died Jan. 11, 1895.



T. Gordon Hake, British poet

Hakim. Title given among various Mahomedan peoples to persons holding judiciary offices, e.g. the chief administrators of certain districts in Persia. The meaning of the word is "one who commands." *Pron.* hah-kim.

Haking, SIR RICHARD CYRIL BYRNE (b. 1862). British soldier. Born Jan. 24, 1862, he entered the army in 1881, joining the Hampshire Regiment. His first active service was in Burma, in 1885-87, and he was in S. Africa in 1889-1900. By then he was a major on the staff, and returned home to become professor of the Staff College, 1901-6. Five years on the general staff followed, and in 1911 he was given command of the 5th Infantry Brigade, which he took out to France in 1914. In Dec., 1914, he was promoted to a division, and in Sept., 1915, was put at the head of the 11th corps, which he led to the end of the war. In 1920 he commanded the Allied troops of occupation in the plebiscite areas of E. Prussia, and in 1921 became high commissioner for Danzig, and in 1923 commander of the British troops in Egypt. In 1916 he was knighted.

Hakka (Chinese, strangers). People of mixed Chinese and aboriginal stock, mostly in S. China. Issuing from Shantung before 250 B.C., they now number several millions in Kwangtung, Kwangsi, and Fukien, with 500,000 in Formosa, and virile colonies in Tong-king, the Netherlands East Indies, and the Straits Settlements, besides many emigrants to Australia, S. Africa, and California. In Hong-Kong they work as barbers and stonecutters. They are thrifty husbandmen and labourers, forming separate communities, with distinctive dialects.

Hakluyt, RICHARD (c. 1552-1616). English geographer. Of remote Dutch extraction, he was born in Herefordshire and educated at Christ Church, Oxford. Having taken orders he became chaplain to the embassy at Paris, 1583, where he collected all available material about French and Spanish voyages to all parts of the world. In 1588 he returned to England, and the following year published *The Principall Navigations, Voiages, and Discoveries of the English Nation*, enlarged ed. in 3 vols., 1598-1600. In 1590 Hakluyt became rector of Wetheringsett, Suffolk, and in 1604 archdeacon of

Westminster. He used his influence to encourage the colonisation of Virginia. In addition to his published works, he left behind a large number of MSS., many of which were printed by the Hakluyt Society. He died Nov. 23, 1616, and is buried in Westminster Abbey.

His cousin Richard, of whose life little is known, was one of the men who was chiefly responsible for sending Frobisher on his voyages. He was a leading adviser in all the American enterprises of his time, and he corresponded with practically all the ocean navigators of his day. His correspondence was preserved by his cousin. *Pron.* Haklout.

Hakluyt Society. British society for printing hitherto unpublished works of early travel. Named after Richard Hakluyt, it was founded in 1846 to print "the most rare and valuable voyages, travels, and geographical records . . . to the circumnavigation of Dampier." By 1913 over 160 volumes had been published, including Raleigh's

school, and the Japanese Club. An American mission has its headquarters here. The deep and commodious harbour is fortified and almost land-locked, fully equipped with docks and quays. Matches are manufactured, and the exports include beans, peas, pulse, sulphur, charcoal, furs, lumber, and the produce of the extensive fisheries.

There is steamer connexion with other Japanese ports, and from Aomori, on Honshu, to which a steamer plies daily, a rly. proceeds to Yokohama. Tramways, waterworks, etc., were established when the town was rebuilt after the disastrous fire of 1907. During the civil war of 1868 it fell into the hands of the rebels, but was recaptured by the emperor in the following year. Pop. 89,800.

Hakone. Watering-place and small lake of Japan, on the island of Honshu. Its thermal springs, pure, sulphurous, and saline, range between 98° and 168° F. The lake, which lies to the N.W. of the resort at an alt. of 2,427 ft., is about 3 m. in length by 1 m. broad.

Hal. Town of Belgium. It stands on the Senne, 9 m. from Brussels, in the province of Brabant. The chief building is the Gothic church of Notre Dame, built in the 14th century, and a popular shrine for pilgrims. It is famous for its miracle-working image of the Virgin, its altar,

its bronze font, its monuments and other treasures, the gifts of kings and princes. There is an hôtel de ville of the 17th century, and the place has several manufactures, including sugar and paper. The canal to Charleroi passes by here. During 1914-18 Hal was in the occupation of the Germans. Pop. 13,000.



Hakodate, Japan. The town and harbour of the treaty port

Guiana, 1848, Hakluyt's *Divers Voyages*, 1850, *The Journal of Christopher Columbus*, 1893, and *Early Dutch and English Voyages to Spitzbergen in the Seventeenth Century*, 1904. The offices are at 1, Kensington Gore, London, S.W.

Hakodate or **HAKODADI.** Treaty port of Japan, at the S. extremity of the island of Hokkaido. It stands on a peninsula in the strait of Tsuguru, 18 m. N. of Omasaki on the neighbouring island of Honshu, and was opened to foreign commerce in 1859. Clean and well laid out, it is picturesquely situated at the foot of a rocky height, 1,150 ft. The chief buildings are the town hall, naval



Hal, Belgium. Hôtel de Ville, and statue of A. F. Servais, the violoncellist

Halakite Case. In Jan., 1917, the private room of Sir Theodore Andrea Cook, the editor of *The Field*, was raided by the military authorities in connexion with the White Powder Syndicate in which Sir T. A. Cook was privately interested. This syndicate was pressing a new explosive named Halakite, for which its inventor, an American named Blanch, claimed extraordinary powers. The English expert board under Lord Moulton had rejected the invention as a fraud.

An inquiry showed that Sir Theodore Cook and others had been dupes of the inventor. Blanch was left to produce his explosive for independent examination, but no Halakite was forthcoming, and the military authorities were left in possession of the field.

Halas or **KISKÚNHALAS**. Town of Hungary, in Little Cumania. It is 84 m. by rly. S.S.E. of Budapest on the line to Belgrade. It is an agricultural centre with large vineyards. Pop. 24,381.

Halation. Defects in photographs consisting of the spread of light from some bright part of the subject, e.g. a church window, to dark parts immediately surrounding it. The chief cause is reflection of light from the glass side of the plate, on which the negative is taken, obliquely back on to the sensitive film. The usual preventive is to give the glass side a dark coating (backing) which absorbs the light. See *Photography*.

Halberd or **HALBERT** (old Fr. *halebarde*). Late medieval weapon consisting of a combined pick and axe with a pike-head, attached to a shaft 5 ft. or 6 ft. long. The bearers of halberds were known as halberdiers, and came to be employed chiefly on ceremonial occasions. The weapon, in a somewhat modified form, is still carried by the English Yeomen of the Guard. The phrase to send anyone to the halberds, i.e. to punish him, arose from the fact that at one time soldiers were flogged while tied to halberds fixed in the ground. See *Arms*; *Pike*.

Halberstadt. Town of Germany, in Prussian Saxony. It stands on the Holzemme, 30 m. S.W. of Magdeburg, and has considerable trade and manufactures, including woollen goods, leather, tobacco, soap, oil refineries, and breweries. Halberstadt, which was an episcopal see from the 9th to the 17th century, has preserved many of its old architectural features, and its timbered houses are notable. The most important building is the 13th-15th century cathedral, dedicated to S. Stephen, and consecrated in 1491.



Halberstadt, Germany. The Gothic Ratskeller, built in 1461, a fine example of woodwork

At the other end of the Domplatz is the Liebfrauen Kirche (1146), and near the cathedral is the Gothic church of S. Martin, completed about 1350, with fine towers restored towards the end of the 19th century. The Gothic Rathaus dates from the close of the 14th century, with Renaissance additions, and the Roland, or symbol of civic liberty, a gigantic armed figure carved in stone, was erected in 1433. The Ratskeller, on the Holzmarkt, is the finest of the wooden houses of the town. Pop. 46,481.



Halberd. 1. Swiss, 14th cent. 2. German, 14th cent. 3. Swiss, 15th cent. 4. Swiss, 16th cent. 5. German, 16th cent.

Halbertstadt. German aeroplane of the Fokker type. It is a single-seater biplane used as a fighting scout in the Great War. The Halbertstadt had a fixed engine, with a tractor airscrew.

Halcyonē. Incorrect transliteration of Alcyonē (*q.v.*), due to a fanciful connexion with the Greek word *hals*, salt. Pron. Hal-si-onee.

Haldane, RICHARD BURDON HALDANE, 1ST VISCOUNT (b. 1856). British politician and lawyer. Born July 30, 1856, the son of Robert Haldane, a Scottish lawyer, he was educated at Edinburgh Academy and university, and afterwards in Germany.

His remarkable gifts won him many distinctions, especially in philosophy, but he chose the bar for a career, and became an English barrister in 1879, and Q.C. in 1890.

In 1885 Haldane was returned to Parliament as a Liberal for Haddingtonshire. He became generally known as a Liberal imperialist during the S. African War, and Liberals were not unanimous in approving his appointment as secretary for war in 1905. He held that position until 1912, just after he had been made a peer, and during his term of office he founded the Territorial force. He became lord chancellor in 1912, retiring 1915. In Jan.-Nov. 1924, he was lord chancellor in the labour government. His many honours include the O.M. Among his writings are a *Life of Adam Smith*, *Translations of Schopenhauer*, and the *Pathway to Reality*. His interest in education was constant, and he did much to establish the newer universities, of one of which, Bristol, he became chancellor. In 1902-4 he was Gifford Lecturer at St. Andrews, and he was an indefatigable speaker on a variety of subjects.

Haldane's political position was always a peculiar one. His moderation made him suspect to Radicals and to many Liberals, while his interest in philosophy, and the length and argumentative nature of his speeches, did not endear him to the average man. His avowed debt to German scholarship was a charge against him, as were the consequences of his visit to Germany in 1912, and his objections to Lord Roberts's proposals for national service. He defended his action in his book, *Before the War*, 1920, which describes his conversations with the Kaiser.



1st Visct. Haldane, British politician
Russell

In 1912 Haldane was sent by the Cabinet to inquire into the gravity of the German menace, and to discuss the possibilities of an amicable understanding. He returned home full of misgiving, and imparted his fears to his chief colleagues, but uttered no word of warning to the public. This told heavily against him in popular opinion, although it is difficult to see what more he could have done without endangering the world's peace by public speeches, and it is certain that he did much to make the expeditionary force efficient for the ordeal of 1914. *Pron.* Haldane.

Haldane, JAMES ALEXANDER (1768-1851). Scottish preacher. Born at Dundee, July 14, 1768, and educated at Dundee Grammar School and Edinburgh University, he made four voyages to the East as a midshipman, settled in Edinburgh in 1794, made a series

J. A. Haldane

After Colvin Smith, R.A.

of evangelistic tours in 1797, and in that year founded at Edinburgh the Society for Propagating the Gospel at Home. Leaving the Church of Scotland, he founded and became pastor of the first Congregational church in Scotland, taking no salary and devoting the income to his society. In 1808 he joined the Baptists, and from that time was engaged in many theological controversies. His numerous writings include *The Duty of Christian Forbearance in Regard to Points of Church Order*, 1811. He was assisted in his work by his brother Robert, and died at Edinburgh, Feb. 8, 1851. *See* Lives of Robert and James Alexander Haldane, A. Haldane, 1852.

Haldane, SIR JAMES AYLMER LOWTHROP (b. 1862). British soldier. Born Nov. 17, 1862, the son of a doctor, he was educated at Edinburgh Academy. From Sandhurst he passed into the Gordon Highlanders in 1882, and served on the Indian frontier between 1894-98, winning the D.S.O. in the Tirah campaign. He was with the Gordons in the earlier part of the S. African War,



Sir James Haldane,
British soldier

Russell

being severely wounded at Elands-laagte, and escaping from Pretoria in 1900.

Having been on the intelligence staff at headquarters in England, he was sent to watch the operations of the Russo-Japanese War, and on his return was again at the War Office as a general staff officer. In 1912 he took command of the 10th brigade, and in 1914 he took this to France, leading it in the early days of the Great War. In Nov. he succeeded to the 3rd division, and in 1917 took command of the 6th corps, which was under him during the German offensive of 1918. In Feb., 1920, he was appointed to command the British troops in Mesopotamia. Haldane was knighted in 1918. He published *A Brigade of the Old Army*, 1920.

Hale. Urban dist. of Cheshire, England. It is $1\frac{1}{2}$ m. S.E. of Altrincham, on the Cheshire Lines Rly. It is in the Manchester area, being practically a residential suburb of that city. Gas and electric light are supplied by companies, and water, hitherto obtained from a company, will, under the Manchester Corporation Act of 1919, be supplied direct by that authority. There are other places of this name in England. One is a village on the Mersey, 10 m. from Liverpool, with Hale Head, on which is a fixed light. Another is a village near Farnham, Surrey, and a third is near Fordingbridge, in Hampshire.

Hale, EDWARD EVERETT (1822-1909). American author. Born at Boston, Massachusetts, April 3,



Edward S. Hale

1822, he was educated at Harvard. He held various pastorates, and was founder and editor of *Old and New*, a magazine finally merged in *Scribner's Monthly*. His *Ten Times One is Ten*, 1870, contributed to the establishment of many charitable clubs. But he is best known as the author of *The Man without a Country*, a story which, appearing anonymously in *The Atlantic Monthly* in 1863, did much to maintain a spirit of loyalty to the union.

Hale, GEORGE ELLERY (b. 1868). American astronomer. Born at Chicago, June 29, 1868, he was educated at the Massachusetts Institute of Technology, and at the universities of Harvard and Berlin. Having devoted himself to the study of astronomy, he became in 1890 director of the Kenwood as-

trophysical observatory. From 1891-93 he was professor of astrophysics at Beloit College. From 1893-97 associate professor of astrophysics in the university of Chicago, in 1897 he was promoted professor, while from 1895 to 1905 he was director of the Yerkes observatory. In 1904 he was made director of the solar observatory of the Carnegie Institution at Mt. Wilson, California. Hale ranks high among the American astronomers, a fact recognized by numerous academic honours. He invented the spectroheliograph, was joint editor of *Astronomy and Astrophysics*, and editor of *The Astrophysical Journal*.

Hale, JOHN PARKER (1806-73). American statesman. Born at Rochester, New Hampshire, March 31, 1806, he was admitted to the bar in 1830. From 1834-41 he was district attorney for his state. In 1842 he entered Congress as a democrat and soon showed strong anti-slavery principles, which met with violent opposition from his constituents, but by a vigorous campaign, known as the Hale Storm of 1845, he won New Hampshire to his cause. In 1847 he entered the Senate and with Chase, Seward, and Sumner organized a weighty opposition to the cause of slavery. In 1847 and in 1852 he was nominated for the presidency, but withdrew in favour of Van Buren in the former year, and was defeated in the latter. A staunch supporter of Lincoln, he served in the Senate until 1865, when he retired and became minister to Spain. There he remained until 1869. He died on Nov. 19, 1873, at Dover, New Hampshire.

Hale, SIR MATTHEW (1609-76). English lawyer. Born Nov. 1, 1609, at Alderley, Gloucestershire, he



Sir Matthew Hale,
English lawyer

*From a portrait in
Lincoln's Inn*

was the son of a lawyer. He was educated at Magdalen Hall, Oxford, and after studying for the Church turned to the law. In 1637 he became a barrister and was soon engaged in some of the great cases of the time, appearing, for instance, on behalf of Laud. Never a partisan, he accepted the dominance of the parliamentarians, and his prosperity continued after the death of Charles I; in 1653 he was made a judge, the first appointed by Cromwell, and in 1655 was elected to Parliament.

In 1660 Charles II made him chief baron of the exchequer and in 1671 chief justice of the common pleas. He died Dec. 25, 1676. A man of great learning, remarkable especially for his industry, Hale wrote books on law, religion, and mathematics. See *Lives of the Judges*, E. Foss, 1848-70.

Haleb or **HALERESH SHABBA**. Arabic name for the Syrian vilayet better known as Aleppo (*q.v.*).

Hales, STEPHEN (1677-1761). British botanist. Born at Bekebourne, Kent, Sept. 7, 1677, he was educated at Cambridge. Having been ordained, he became perpetual curate of Teddington in 1709, where he passed his life, although he held livings in other parts of the country. He introduced the methods of weighing and measuring into his experiments on living plants, and so laid the solid foundations upon which modern science in this department has been built up. His books, *Vegetable Statics*, 1727, and *Haemostatics*, 1733, consist of the memoirs in which he communicated his discoveries to the Royal Society. He was one of the founders of the Society of Arts. He died at Teddington, Jan. 4, 1761.

Hales Grenade. Explosive grenade made for use both from the rifle or hand, and detonated by a percussion fuse.

The hand grenade consists of a sheet brass cylinder, round the upper part of which is a segmented cast-iron ring to provide missiles. A central tube extends through the body, and in this is the striker pellet, which is held away from the detonator by the creep spring, and is secured until the grenade is to be thrown by the safety-pin, which passes through the base plug and striker. A detonator holder is carried separately until the grenade is about to be used, when it is screwed into position. It is provided at its lower extremity with a percussion cap, and contains the detonator, which has a perforated base to admit the flash from the cap to the composition.

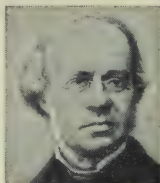
In the earlier issues of grenades the explosive was tonite, but later ammonal or amatol was used. The grenade is fitted with a wooden handle about 15 ins. long, and to this is attached a tail of streamers to ensure the grenade striking its objective nose first. The complete grenade weighs about 1 lb., and can be thrown 60 to 70 yds.

The rifle grenade is of similar general construction, but is provided with a heavy segmented cast-iron body. The cap and detonator are arranged in a similar

manner to those of the hand grenade, but the striker is made with a reduced diameter in the centre, and is prevented from moving forward by two small retaining bolts. In place of the wooden handle the grenade is fitted with a steel rod, 10 ins. long, which is of the same calibre as the barrel of the service rifle, a special blank cartridge being used to propel the missile. The range of these rifle grenades is about 300 to 400 yards. See *Ammunition*; *Explosives*; *Hand Grenade*; *Rifle Grenade*.

Halesowen. Market town and parish of Worcestershire. On the G.W. and Mid. joint rly., it is 6½ m. from Birmingham, and stands on the Stour and under the Lickey Hills. William Shenstone, who lived at the Leasowes here, is buried in the churchyard of the church of SS. Mary and John the Baptist. There is an old grammar school and a few remains of an abbey. The chief industries are the making of iron and steel goods. Cradley Heath, a centre of the nail and chain manufacture, is in the parish. Market day, Sat. Pop. 4,100.

Halévy, JACQUES FRANÇOIS FRO-MENTAL ÉLIE (1799-1862). French composer. Born in Paris of Jewish



Fromental Halévy,
French composer

parentage, May 27, 1799, his real name was Levi. He studied at the Conservatoire, then under Cherubini, and, after going to Italy with the *grand prix*, returned to France to devote himself to the composition of operas, of which he wrote a large number, including *The Jewess*. Professor at the Conservatoire from 1827, he there trained several great musicians. Halévy was secretary of the Academy of Fine Arts and chevalier of the Legion of Honour. He died March 17, 1862.

Halévy, LUDOVIC (1834-1908). French dramatist and novelist. He was born in Paris, Jan. 1, 1834, and started to write for the stage at an early age. Most of his work in this direction, operettas, vaudeville pieces, and comedies, was done in collaboration with Henri Meilhac (1831-97), among the



Ludovic Halévy

most noteworthy being *Orphée aux Enfers*, 1861; *La Belle Hélène*, 1864; *Fanny Lear*, 1868; *Froufrou*, 1869; and *Le Petit Duc*, 1878. Halévy also published volumes of his collected short stories, notably *Monsieur et Madame Cardinal*, 1873, and several novels, of which the best is *L'Abbé Constantin*, 1882. He was elected to the French Academy in 1884, and died in Paris, May 8, 1908.

Halfa. Prov. of the Anglo-Egyptian Sudan, containing the districts of Halfa, Mahas (Delgo), and Sukkot (Kosha). Area, 91,600 sq. m. Pop. 38,325.

Half Blood. Relationship between persons deriving from the same father or mother, but not from the same father and mother. Whole blood is relationship between persons deriving from the same couple of ancestors. Under the old English feudal law regulating title by descent, the basic principle of collateral inheritance was that the heir to a *feudum antiquum* must be of the whole blood of the first feodatory or purchaser. Actual proof of such lineal descent gradually becoming impossible, the law substituted reasonable proof, only requiring that the claimant should be next of the whole blood to the person last in possession. A distant kinsman of the whole blood was admitted, or an estate even allowed to escheat to the lord, rather than that the half blood should inherit.

Obvious hardships inevitably resulted. Thus if a father had two sons by different wives, these half brothers could not inherit from each other, so that if the elder succeeded his father in the estate and died without issue, the younger was deprived of inheritance as being only of half blood to the person last seised. Whereas had the elder brother predeceased the father, the younger could have inherited, not as heir to his half brother but as heir to their common father who was the person last actually seised. In England this, with other hardships, was abolished in 1833, and the rules as to the descent of real estate and the law of inheritance by the half blood as well as by the whole blood are prescribed by an Act of 1859. In the U.S.A. the laws affecting the half blood vary in different states. In some, relatives of the half blood inherit equally with those of the whole blood in the same degree; in others they only inherit if none of whole blood exist. In Louisiana natural children, if acknowledged, may inherit from both parents if no lawful issue exists. See *Family*; *Inheritance*; *Kinship*.

Half Pay. Rate of pay issued to officers of the navy and army who have for some reason ceased to do duty, and have been removed from their corps, appointment or command, but who are on the active list and still eligible for employment.

Half-timer. Name given to a pupil who attends school for approximately half the ordinary hours, going to work in the others. In England the Education Act of 1870, and later Acts, made education compulsory, but local authorities were allowed to pass by-laws permitting children to become half-timers on reaching a certain age, generally 12 or 13, provided they had reached a certain standard. The number of half-timers in England in 1911-12 was 70,255, the annual figures showing a steady decrease in the number of these partial exemption scholars. Most were employed in textile factories in Yorkshire and Lancashire.

Attempts to end half-time were resisted by employers and workers, but the Education Act of 1918 provided for its abolition, and from Jan. 1, 1921, local authorities had no power to grant exemption from attendance at school to any child between the ages of 5 and 14. Under the Employment of Women, Young Persons, and Children Act which came into force 1921, it was illegal to employ any child under 14 in industry unless the child was already so employed. *See Children; Education; Factory Acts.*

Half-tone. Photo-mechanical process of making typographic printing blocks from full-tone originals such as photographs, wash-drawings, and the like, as distinguished from those in line. While the making of line blocks by photo-etching became commercially practicable as early as 1860-70, some years passed before a satisfactory method was devised for breaking up full-tone originals into a form capable of printing with type. In the earlier processes of Pretsch, Dallas, and Negre a gelatine relief was made from a negative of the original. This relief was rendered conductive with black-lead and an electrotype made from it.

Other inventors broke up the image by placing a ruled or irregular screen in front of the sensitive plate when photographing the original with the object of replacing the continuous tone by a fine pattern of dots or other form. This is the method which is now commercially used in making half-tone blocks, but the present process, which is purely optical and is carried out with great rapidity and



Half-tone. The same subject as reproduced through six different screens. (1), 150 lines per inch; (2), 135; (3), 120, the screen used for *The Universal Encyclopedia* blocks; (4), 100; (5), 80; (6), 64; 5 and 6 being commonly used for newspaper illustrations. *See text*

facility, was evolved directly from a mechanical and tedious method independently worked out by Pettit in France and F. E. Ives in America in 1878. These experimenters, who were the first to produce successful half-tone engravings, made a plaster cast from a gelatine relief of the original, the high-lights forming the raised parts and the shadows the hollows. The cast was blackened on the surface and ruled through, line by line, with a V-shaped tool, the action of the cutting V on the black relief causing the high-lights of the picture to be formed by fine black lines where the white ground of the plaster is most deeply cut; the shadows by fine white lines cut away by the point of the V; and intermediate tones by corresponding

portions of white and black lines. The excised relief was then photographed, a resist-image printed from the negative on to metal, and the latter etched. Ives perceived that this translation of the original into minute units of black and white in correspondence throughout with the tones from high-light to shadow, could be very simply done by photographing the original on to a sensitive plate having a fine ruled screen of crossing opaque lines placed at the requisite distance close in front of it. Cross-line screens for this purpose were made by Levy of Philadelphia about 1880, and from this time half-tones began speedily to come into general use, first for magazine and book illustration, later in daily newspapers.

In the practical making of half-tone blocks, the original is photographed with a screen of fineness corresponding with the quality of the printing. For magazine illustration, a screen of 120 to 135 lines per inch is commonly used; for newspaper half-tones, one of 65 to 100 lines, and for the finest catalogues and book engravings, 150 to 175 lines. The action of the screen at a short distance from the plate consists in the formation on the latter of a dot from every aperture produced by the crossing of the lines of the screen, these dots automatically ranging in size from mere separate points in the highlights, to larger units which unite to form a honeycomb pattern in the middle tones, and an almost solid black in the shadows. From this screen-negative a resist-image is printed on metal, usually copper, although zinc is largely used. The metal is usually sensitised by the enameline process, viz. by coating with a solution of fish-glue and bichromate of ammonium which is flowed on and thinly and evenly distributed by whirling the plate.

After drying and printing under the negative, whereby the light-affected parts are rendered insoluble, the plate is rinsed, and usually is then dipped in a dye bath of methyl violet to render the very thin image plainly visible. The soluble parts of the coating are removed, first in cold and finally in warm water, and the plate, after drying, is "burnt in"—that is, heated to a temperature at which it scorches wood, whereby the fish-glue image is converted into a hard enamel-like substance which is an effective resist of the etching fluid. The latter is perchloride of iron (ferric chloride) for copper, nitric acid for zinc. As in the case of line blocks, half-tones are now very largely etched by the acid spray of a machine.

The next operation is the so-called "fine" etching or re-etching, called "staging" in America. The plate up to this point is said to have been "flat-etched." Fine etching consists in lightening parts of the plate by further treatment in the etching bath or machine, the other portion of the plate being covered with etch-proof varnish. The process, which is artist's work, is carried out to improve the quality of a block from a defective original, for example, making an object stand out against its background by lightening the tone of the latter, but it is very largely used to correct the defective work of the photographer in making the screen-negative.

When facsimile reproduction, or the nearest approximation to it, is required, fine etching should be vetoed; without its aid the half-tone process is capable of almost exact reproduction of the tones from an original. After fine-etching a plate is often further improved by mechanical means. Parts can be made to print darker by rubbing with a burnisher, a highly polished steel blade with rounded edges; or parts may be lightened with a roulette, a milled steel tool which can be used to impress minute holes into the plate.

The last stages in the making of a half-tone plate are routing, lining, mounting, and piercing, for all of which special machines have been devised. Routing consists in cutting away the metal of the plate to part of its thickness by means of a high-speed tool like a drill. It is used for blocks where, for example, a head or a machine is required to print without a background. Lining is the putting round the rectangular picture of a line or rule, or a series of line borders. This is done, as a rule, also by the machine which bevels the plate. The plate is next mounted type-high on hard wood, and the whole, the wood as well as the metal, may be "pierced" again by a high-speed cutting tool, if it is required to provide space for type among several pictures on a single block.

Although the making of a half-tone block involves so many separate operations, this branch of photo-engraving has become so highly organized and accelerated by mechanical appliances that the whole process can be done in a very few minutes. At a demonstration made by The Daily Mail for a French editor, a half-tone block was finished by the Mail's photo-engraving department within 34 minutes of the original photograph having been taken on the Thames Embankment. See Intaglio; Photogravure; Process.

G. E. BROWN

Haliartus. Town of ancient Greece, in Boeotia, situated on the southern shore of Lake Copais. Said to have been destroyed by Xerxes during his invasion of Greece, it was rebuilt and became an important place. The site and ruins of Haliartus are near the modern village of Mazi. In 171 B.C. it was besieged by the Romans, and its territory handed over to Athens, 167.

Haliburton, THOMAS CHANDLER (1796-1865). Canadian judge and author. Born at Windsor, Nova Scotia, son of a justice of the common pleas, and educated at the grammar school and King's College, he was called to the bar in

1820, became chief justice of common pleas, 1828-40, and judge of the supreme court, 1842-56, when he settled in England. He was M.P. for Launceston, 1859-65, and died at Isleworth, Aug. 27, 1865.



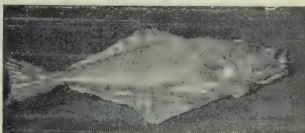
T. C. Haliburton,
Canadian judge

Founder of the American school of dialect humour,

he is famous as the creator of Sam Slick, Yankee clockmaker and pedlar, whose drolleries and wit first found expression in The Nova Scotian newspaper in 1835.

In addition to The Clockmaker, or Sayings and Doings of Sam Slick of Slickville, 1837-40, he wrote A General Description of Nova Scotia, 1823; Historical and Descriptive Account of Nova Scotia, 1825-29; Bubbles of Canada, 1839; The Attaché, or Sam Slick in England, 1843-44; The Old Judge, or Life in a Colony, 1849; Traits of American Humour, 1852; Rule and Mis-rule of the English in America, 1850; Sam Slick's Wise Saws and Modern Instances, 1853. To encourage Canadian literature a society called the Haliburton Society was founded at King's College, Windsor, N.S., and its first publication was a memoir of Haliburton by F. B. Crofton, 1889.

Halibut (*Hippoglossus vulgaris*). Largest of the flat fishes. It occasionally attains a length of over 7 ft., but is usually between 4 ft. and 5 ft. The body is thick and narrow, and brown on the upper side. Generally found at some distance from the shores to a depth



Halibut, the largest flat fish

of 100 fathoms, it is taken by trawling. Its food consists of fish and the smaller crustaceans. It is extremely prolific and an important food fish.

Halicarnassus. Ancient Greek city of Caria in Asia Minor, opposite the island of Cos. A Dorian colony from Troezenē, like other Greek cities of Asia Minor, it became subject to Persia in the 6th century B.C. In the 4th century B.C. it was the seat of a dynasty which ruled in Caria. On the death of Mausolus, one of the dynasty, his widow Artemisia raised a magnificent monument to his memory known as the Mausoleum (*q.v.*), which was



Halicz, Poland. The principal thoroughfare of the town, leading towards the Dniester

considered one of the seven wonders of the ancient world. In 334 B.C. the city was taken after a siege by Alexander the Great. The historians Herodotus and Dionysius of Halicarnassus were natives. It is the modern Budrum.

Halicz OR GALICZ. Town of Poland, in Galicia, formerly belonging to Austria-Hungary. It stands on the Dniester, 60 m. S.S.E. of Lemberg (Lwow), and is noted for the brine springs in the vicinity. Salt and soap are manufactured, and there is some trade in timber. The medieval fortress of the princes of Halicz, which stands on an eminence, is now in ruins. At the partition of Poland in 1773 the town of Halicz was included in Austrian Galicia. It became part of Poland when that kingdom was reconstituted in 1919. Pop. 4,956.

Halicz, CAMPAIGNS AROUND. Operations in the Great War, 1914-17. The Russians in their invasion of Galicia in the first month of the war captured Halicz and Tarnopol on Aug. 27, 1914, and overran the greater part of Galicia. In the spring of 1915 the Austro-Germans commenced an important counter-campaign, and their operations for the recapture of Halicz were undertaken in June, 1915.

On June 22, 23, and 24, the Russians threw the German and Austrian forces back, but in accordance with the retreat eastward of their armies farther N. they abandoned the line from Zuravno to near Halicz, and fell back to the Gnila Lipa on June 26, about the same time as these other armies reached that river, along which heavy fighting proceeded round Rohatyn and other points in its course. On June 30 the Russians retreated to the Narajovka, with a further retirement to the Zlota Lipa in view.

Meanwhile, Austrian forces were bombarding Halicz, and the Russians withdrew from the south side of the river, preparing at the same time for evacuating the town, in accordance with the movement of

permitting a general withdrawal from the line of the Gnila to that of the Zlota Lipa, the new positions being taken up on July 3.

Russia's final offensive was directed towards recovering the ground lost in Galicia in 1915, and one of the objectives was the recapture of Halicz.

While the struggle raged around Brzezany (see Brzezany, battles of), in the course of Brusiloff's 1917 offensive in Galicia, Korniloff, with the 8th Russian Army, cooperated on the S. between the Dniester and the Pruth, by bombarding, on July 7, the Austro-German front below Jezupol along the Bistritsa, where stood the 4th Austrian Army commanded by Tersztyansky, and attacking it in force next day. Having made several breaches in the fortified lines of the enemy to the west of Stanislaw, the Russians advanced, and captured Jezupol and various adjacent villages on the Bistritsa. On July 9 Korniloff continued his advance to Halicz, reaching the Lukovitsa, the enemy retreating to the line of the Lomnitsa. As the result of the two days' fighting the Austro-German front was rolled up for 13 m. to a depth of from three to seven m. On July 10 the Russians resumed their pursuit N.W. and captured Halicz by a converging attack. During the three days' advance, which had covered 15 m., they captured 10,000 prisoners.

On July 11 the Russians took Kalusz, W. of the Lomnitsa, and next day, crossing the river at its junction with the Dniester, captured the heights on the western bank, while farther south the enemy was driven back from the hills north-east of Kalusz. On July 13-14 the Austro-Germans, who had been reinforced, made a determined stand on the Lomnitsa, and, pushing the Russians back strongly, attacked towards Kalusz, which they recaptured, July 16, the Russians being compelled to withdraw across the river.

their troops higher up. On June 27 the Austrians occupied S. Halicz, and on the night of June 28-29, under cover of a thick fog, they crossed the river and got into N. Halicz. It looked as if they might turn the Russian line, but on June 30 the Russians rallied near Halicz and drove the Austrians back to the river, thus

On July 19 the Austro-Germans began a counter-offensive against the Russian front along the Zlota Lipa to the Dniester, which, owing to the defection of the Russian troops there, quickly succeeded in changing the general situation in the whole southern area to the utter discomfiture of Russia. On July 21 the Russians were driven from Babin and across the Lomnitsa. As the enemy pressure and the Russian breakdown farther north became more and more pronounced the S. Galician armies had to fall back, abandoning Halicz, Nodvorna, Stanislaw, and other places. See Galicia, Campaigns in; Korniloff.

Halidon Hill. Battlefield near Berwick-on-Tweed, where, July 19, 1333, a battle was fought between the English and the Scots. The English, under Edward III, were nearly all dismounted, and were divided into three divisions or battles, each composed of men-at-arms, with archers on their flanks. The Scots, under Sir Archibald Douglas, came up the hill in dense columns. Their attack was repulsed by the showers of arrows, only their left reaching the English, while the rest were driven down the hill, pursued by the English on horseback. The forces engaged were not large, and the losses of the English were very light. The battle was fought by the Scots to save Berwick, but on their defeat the town was promptly surrendered to Edward.

Halifax. County and mun. borough of Yorkshire (W.R.). It stands at the junction of the rivers



Halifax arms

Hebble and Calder, 7 m. S.W. of Bradford, and 191 m. from London. It has stations on the G.N. and L. & Y. Rlys. The principal secular buildings include the town hall, a 19th century edifice designed by Sir Charles Barry, and the royal infirmary in the Renaissance style. The Piece Hall, now a market, dates from the 13th century.

Of the churches that of S. John the Baptist is the chief; although dating mainly from the 17th century, part of it is older, while there was a church on the site before 1066. All Souls is a fine modern church designed by Sir Gilbert Scott, and the chief of many Non-conformist churches is the Congregational building, Square Church. There is a public library and museum; also the Ackroyd museum and



Halifax, Nova Scotia. Plan of the Canadian city, showing the principal quays and dockyards

art gallery. There are several parks, one having been given by Sir F. Crossley, who gave his house for a museum. To the same benefactor and his brother the town owes the Crossley almshouses and the Crossley orphanages. There are technical schools, Heath grammar school, and the Waterhouse school. A bridge connects the two parts of the town which lie on either side of the river valley. Halifax is a centre for the manufacture of woollen and worsted goods, carpets, and blankets. There is some cotton spinning, while machinery and chemicals are made. Ironworks are important. The corporation owns the gas and water undertakings, tramways, and electric light supply. One member is returned to Parliament.

The town was but a hamlet before the introduction of the cloth trade about 1500. From then it grew rapidly, but it was not made a municipal borough until 1848. From 1832 to 1918 it sent two members to Parliament. Its gibbet is historic. On this stealers of cloth were executed, after trial before a jury of 16. There is a model of the gibbet in the museum. In 1921 the town adopted Metz-en-Couture in the dept. of Pas-de-Calais. Market day, Sat. Pop. (1921) 99,129.

Halifax. City of Nova Scotia, Canada, a seaport and the capital of the prov. It stands on a hill overlooking Chebucto Bay, named after it Halifax harbour, and owes its importance to its position. The harbour is one of the finest in the world; safe and spacious, it is 6 m. long and 1 m. broad. It has ample docks, etc., including the royal

dockyard established here in 1758. It has a large dry dock and accommodation for the largest steamers. An extensive scheme of improvements begun before the Great War, was retarded by the war and also by a terrible explosion which took place in Dec., 1917, when a munition ship collided in the harbour with another vessel. Immense damage was done, especially at Richmond and the N. end of the city generally, where many streets were laid in ruins.

Over 300 persons were killed, and 3,000 houses damaged, the loss being estimated at £5,000,000.

Halifax is 837 m. from Montreal, and is the terminus of two transcontinental lines of rly., C.P.R. and



Halifax, N.S., arms

C.N.R., as also of those confined to the prov. Steamers go regularly to Europe, the U.S.A., the West Indies, and elsewhere. It is Canada's chief winter port, the headquarters of the Atlantic section of the Canadian navy, and since its foundation has been a garrison town, strongly fortified. In 1906 the Dominion became responsible for its defence. Its exports are fish,

lumber, etc., and its industries include shipbuilding, founding, sugar and oil refining, and the making of furniture, soap, paint, tobacco, etc. There are also factories for making cotton and woollen goods, agricultural implements, etc.

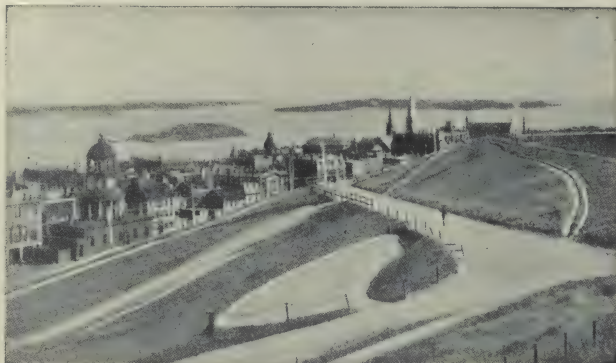
Founded in 1749, and named after the earl of Halifax (1716-71), Halifax has still some wooden houses. It was made the provincial capital in 1750. In appearance it is somewhat English, a reminder of the time when it was the main gateway into Canada and a military and social centre relatively more important than it is to-day. Its chief buildings are those erected for official uses, e.g. the house of the Nova Scotia legislature and the residence of the lieutenant-governor. The Roman Catholics have a cathedral, while S. Paul's is the oldest Anglican church. The city has a citadel. There are hospitals and other charitable institutions, as well as several schools and colleges, the chief of which is Dalhousie University. It is governed by a



Halifax, England. The parish church of St. John. Top, right, the town hall, built by Sir Charles Barry, 1862

Valentine

mayor and corporation, and has supplies of electric light, gas, and water. The amenities include public parks, notably Point Pleasant, and boating and fishing on an arm of the harbour. Dartmouth, across the harbour, is really a suburb of the city. Pop. 46,619.



Halifax, Nova Scotia. The town and harbour seen from the citadel

Halifax, EARL OF. English title borne by the families of Savile and Montague. The first holder was the statesman George Savile, who was made Viscount Halifax in 1667, and earl of Halifax in 1679. In 1682 he was advanced to a marquessate, but when his son William died, in 1700, all the titles, save an old baronetcy, became extinct. At once, however, the Whig statesman, Charles Montague, was made Baron Halifax, and in 1714 he became an earl. On his death in 1715 the earldom became extinct, but the barony passed to his nephew George, who in the same year was made earl of Halifax. He was succeeded in 1739 by his son George, who took the additional name of Dunk, and on his death in 1771 the titles again became extinct.

Halifax, GEORGE SAVILE, 1ST MARQUESS OF (1633-95). British statesman and author. The son of Sir William Savile, a Yorkshire baronet, he was born to wealth and station, his relatives including Shaftesbury and other prominent men. He was well educated, and learnt much from his



1st Marquess of Halifax, British statesman

From a print

uncle, Sir W. Coventry. In 1660 he sat in Parliament, but his political career only began about 1667, when, his uncommon abilities having been recognized, he was made Viscount Halifax. He was employed on diplomatic work, and was an active member of the privy council and the House of Lords; about 1679 he became one of the king's chief advisers, and he was the leader of the opposition to the exclusion of James from the throne, the rejection of the Exclusion Bill being largely due to his efforts. He

was not, however, friendly to James. His policy as a leading member of the executive was throughout a moderating, though not always a successful one. He objected to the execution of Russell and Sidney; he tried to reconcile the king with Monmouth after the Rye House plot, and to establish more friendly relations between Charles and William of Orange. In 1679 he was made an earl, and in 1682 a marquess.

On the accession of James, Halifax lost his power, although for a while he was lord president. He spoke against nearly all the unconstitutional acts of the king, and his Letter to a Dissenter was instrumental in defeating the Declaration of Indulgence. He did not, however, join William of Orange on his landing; instead, he acted as a mediator, after which, to the chagrin of his Tory associates, he joined William and acted mainly with the Whigs. For a few critical days he was the acting head of the government; it was he who presided over the council that, after the flight of James, took steps to keep order, while as speaker of the House of Lords he had a large share in arranging the settlement of 1689. As the nation's spokesman he formally offered the crown to William and Mary. Made lord privy seal, Halifax was one of the new king's chief advisers, but he had many enemies, and in 1690 he retired from the cabinet. He continued, however, active, mainly as a critic, until his death, April 5, 1695. He is buried in Henry VII's chapel, Westminster Abbey. He was twice married, and left a family. One grandson was the great earl of Chesterfield.

Halifax was a statesman and an orator, but his fame rests more upon his work as a thinker. The name of the trimmer, coined by himself, expresses his political ideas if the word is taken without the

more sinister associations that have grown up around it. He thought too clearly, and knew too much to be a mere party politician, while he anticipated many of the ideas of a later day. Unlike some theorists, he was never afraid to carry his moderating, if unpopular, precepts into practice. His wit was the admiration of all save those who were wounded under his sarcasms. Halifax's great work is *The Character of a Trimmer*, written in 1684. *Maxims of State* is another, while he wrote *The Character of Charles II*, *Some Political, Moral, and Miscellaneous Thoughts and Reflections*, and *The Anatomy of an Equivalent*. In his treatises on statecraft he put forward his idea of the state and its functions; unlike Hobbes, it was no appeal to first principles, but a guide to practical politics. See *Life and Letters*, H. C. Foxcroft, 1898.

Halifax, CHARLES MONTAGUE, EARL OF (1661-1715). British statesman. Born at Horton,



Earl of Halifax, British statesman

From a print

Northamptonshire, April 16, 1661, he was a grandson of the 1st earl of Manchester. Both at Westminster School and Trinity College, Cambridge, he made his mark as a scholar; he was associated with Sir Isaac Newton, wrote verses, and studied philosophy. In 1689 as a Whig he entered Parliament as M.P. for Maldon, owing this and other favours to his friend the "magnificent" earl of Dorset. In the Commons he won an early reputation, and in 1692 was made a lord of the treasury, being advanced in 1694 to the post of chancellor of the exchequer.

In these years Montague introduced the important financial reforms which place him in the first rank of English financiers. He helped to found the Bank of England, was the leading spirit in reforming the coinage, and initiated the National Debt and the first issue of exchequer bills. In 1697 he was made first lord of the treasury. In 1698 Montague was accused of fraud; the charge was not proved, but his honesty was not equal to his talents, while his vanity brought him further enemies. In 1699 he resigned, taking the rich sinecure office of auditor of the exchequer which he had carefully provided for himself. In 1701 he was made a peer, taking the title of Baron Halifax.

Two unsuccessful attempts were made by the Tories to impeach him. He was employed once or twice on public affairs during Anne's reign, but political office only came again when George I became king. In 1714 he was made first lord of the treasury and created earl of Halifax, but he had only been in office a few months when he died, May 19, 1715. He left no children. Halifax loved the society of men of letters, who were entertained and rewarded by him; among his friends were Addison, Pope, and Prior, with the last of whom he collaborated in a parody of *The Hind and the Panther*.

Halifax, GEORGE MONTAGU DUNK, 2ND EARL OF (1716-71). British politician. The son of George



2nd Earl of Halifax,
British politician

Montagu, earl of Halifax, he was born in Oct., 1716, and educated at Eton and Trinity College, Cambridge, succeeding to the earldom in 1739. He assumed the name of Dunk on his marriage to the heiress, though not the daughter, of Sir Thomas Dunk. Halifax was in political life from 1748 to 1771. He was in turn president of the board of trade and plantations, lord lieutenant of Ireland, and first lord of the admiralty; in 1762 he was made secretary of state, and later lord privy seal, serving in the ministries of Bute, Grenville, and North. He died June 8, 1771, leaving no son.

Halifax, CHARLES WOOD, 1ST VISCOUNT (1800-85). British statesman. Born Dec. 20, 1800, he was the eldest son of Sir F. L. Wood, a Yorkshire baronet and landowner, whom he succeeded in the baronetcy in 1846. He was educated at Eton and Oriel College, Oxford, and married a daughter of Charles, 2nd Earl Grey. Having entered Parliament as a Whig, from 1832-34 he was joint secretary to the treasury, and from 1835-39 secretary to the admiralty. In 1846 he took office as chancellor of the exchequer, remaining there until transferred to the presidency of the board of control in 1852.

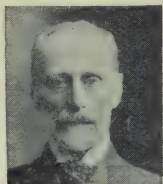
He was first lord of the admiralty, 1855-58, and secretary for India, 1859-66, seven very difficult years.



1st Viscount Halifax,
British statesman

In 1866 he left office and was created Viscount Halifax, having represented that town in Parliament, 1832-66. In 1870 he became lord privy seal, and when he left office with the Liberals in 1874 his long official life ended. He died at Hickleton, Yorkshire, Aug. 8, 1885.

Halifax, CHARLES LINDLEY WOOD, 2ND VISCOUNT (b. 1839). English churchman. Born in London, June 7,



Charles L. Wood,
2nd Viscount Halifax,
Lafayette

1839, the son of Charles Wood, 1st viscount, and educated at Eton and Christ Church, Oxford, he succeeded to the peerage in 1885. From 1862-70 he was groom of the bedchamber to the prince of Wales, and in 1886 became an ecclesiastical commissioner. For 50 years he was a recognized leader of the High Church party, and from 1867-1919 was president of the English Church Union.

A Liberal Unionist in politics, he was conspicuous for his opposition to disestablishment and divorce laws and for his championship of the interests of the Established Church.

Halkett, HUGH HALKETT, BARON VON (1783-1863). British soldier. The son of a soldier, he was born at Musselburgh, Aug. 30, 1783. He entered the army and first saw service in India. In 1803 he took a commission under his brother Colin in the German legion, a body of Germans in the pay and service of England. He served with this in several campaigns in Germany and the Netherlands, and went with it to Portugal in 1808. There he won fame at Albuera and other battles. For the rest of his life Halkett was an officer of the Hanoverian army. He was made a noble and appointed inspector-general of infantry. He led some



Baron Halkett,
British soldier

was first in the service of Holland. Later he commanded a battalion of the German legion in the Peninsular War, and led a brigade at Waterloo, when he was wounded.

Hall. Word used originally for a large room. It was specially applied to the room in which kings and others in authority received suppliants, hence the phrase, the hall of justice. The same room was also used for feasts and ceremonies and in castles and other large residences as a dining-room for the household, a use which persists in the halls of colleges, public schools, and similar institutions. It was also given to the place where the burgesses of a town or the members of a guild met, hence comes the town hall and the guildhall. A further use, arising out of the first, was for a manor house. This was the hall in which justice was dispensed, and so in time the house itself became known as the hall. The large residence in many English villages is consequently known as the hall. Notable halls, using the word for a room, are Westminster Hall, the hall of the Middle Temple, the hall of Christ Church, Oxford, the halls of several of the London livery companies, and the banqueting hall, Whitehall.

A hall of fame is a building erected for the purpose of commemorating great men. One such hall is part of the buildings of New York University. Finished in 1900, it consists of a colonnade, 500 ft. long, with a hall and rooms for the reception of portraits and mementoes of the chosen. The colonnade has 150 panels on which the names of the famous dead can be recorded. Each must be a citizen of the U.S.A., and must have been dead for at least ten years. The method of selection is by a board of 100 selectors, men of standing as scholars and writers. Up to Nov., 1920, five elections had taken place and 63 names admitted.

Hall. Town of Austria, in Tirol, 5 m. E.N.E. of Innsbruck. Situated on the Inn, at a height of 1,895 ft., it was a place of some importance in medieval times by reason of the salt mines of the Haller Salzberg, 9 m. to the N., which are still worked. The chief buildings are the 13th century parish church, and the old town hall (15th century). Chemicals, felt, buttons, etc., are manufactured. Pop. 7,520.

Hall OR SCHWÄBISCH-HALL. Town of Germany, in Württemberg. It lies in the deep valley of the Kocher on both banks of the river, 35 m. N.E. of Stuttgart, and still retains an old-world appearance. There are two important churches, S. Catharine and S. Michael, both 15th century Gothic, the latter having replaced a Romanesque building. The fountain in the market place with sculptures dates

from 1509. The salt-works are important, and there are saline baths on an island in the river. There is a large trade in cattle.

Belonging in the 11th century to the counts of Westheim, it passed to the knights templars. It was a free city of the empire from the 13th century down to 1802, when it was taken over by Württemberg. The coins called Heller (Häller) were first struck at the mint here. To the S. of the town is the 11th century Benedictine abbey of Kumburg. Pop. 9,400.

Hall, Sir Alfred Daniel (b. 1864). British agriculturalist. Educated at Manchester and Oxford, in 1894 he became principal of the South-Eastern Agricultural College, Wye. He left there in 1902 to be director of the Rothamsted Experimental Station, where he remained for 10 years. In 1917 he was appointed permanent secretary to the board of agriculture, receiving a knighthood the following year. He published much on agriculture, and contributed papers to the Proceedings of the Royal Society, Chemical Society, etc.

Hall, Asaph (1829–1907). American astronomer. Of humble birth and little education, his taste for mathematics led him to study. In 1857 he obtained a position as assistant in the Cambridge observatory. Here his progress was rapid, and after five years he was appointed professor of mathematics in the U.S. naval observatory. He was sent on expeditions to Bering Straits, Sicily, Vladivostok, and elsewhere to observe eclipses and transits, and in 1877 he made his name by the discovery of the two satellites of Mars. Retiring from the observatory in 1891, from 1895–1901 he was professor of astronomy at Harvard.

Hall, Charles Francis (1821–71). American explorer. Born at Rochester, New Hampshire, he began his career as a journalist, and, in the service of the American Geographical Society, in 1860 accompanied the expedition sent to search for Sir John Franklin, and passed two years amongst



the Eskimos. In 1864 he made another Arctic voyage, meeting, in 1866, some Eskimos who gave him authentic details of the fate of Franklin and his party. From them he received Franklin's watch and

other relics which put the fate of the explorer beyond all doubt. On this occasion he spent five years in the Arctic regions. In 1871 he was sent on another expedition by the U.S. government, and reached 82° 11' N., the farthest north any vessel had yet attained. After a sledging expedition he was taken ill and died, Nov. 8, 1871. After many dangers his party returned to New York in 1873.

Hall, Charles Martin (1863–1914). American chemist. He was born in Ohio, Dec. 6, 1863, and educated at Oberlin College. He patented a method of preparing aluminium by dissolving alumina in a fused bath composed of the fluorides of aluminium and a metal more electro-positive than aluminium. By this invention aluminium became available at a cheap price. He died Dec. 27, 1914.

Hall, Christopher Newman (1816–1902). British Nonconformist. Born at Maidstone, May 22, 1816, son of John Vine Hall (1774–1860),



C. Newman Hall,
British Nonconformist

proprietor of The Maidstone Journal and author of The Sinner's Friend, he was educated at Rochester and Totteridge. At the age of 14 he entered his father's printing office, becoming compositor, reader, and reporter. Then came conversion, lay preaching, and study for the ministry. He studied at Highbury College and London University, 1837–42; was pastor of Albion Congregational Church, Hull, 1842–54; of Surrey Chapel, London, 1854–76; and of the same congregation at Christ Church, Lambeth, built at cost of £84,000 in perpetuation of Surrey Chapel, 1876–92.

He was chairman of the Congregational Union, 1866, laboured incessantly as an evangelical preacher, visited Canada and the U.S.A. in 1867, was an eloquent vindicator of the North during the American Civil War, and wrote many devotional works. Of his tract, Come to Jesus, 1848, translated into various languages, 4,000,000 copies were sold. He died Feb. 17, 1902, and was buried at Abney Park.

Hall, Edward (c. 1600–1547). English chronicler. A Shropshire man, he was educated at Eton and King's College, Cambridge. He became a barrister and M.P. for Bridgnorth in 1542, while he also held official positions in the city of London. Hall is known solely as the author of a Chronicle published

in 1548. This, called in full The Union of the noble and illustrious families of Lancaster and York, gives an account of the history of England from 1399 to 1547, when Henry VIII died. It is a valuable source, while it is also interesting because of Shakespeare's debt to it. Hall was a Protestant, a royalist, a hater of priests, and a lover of pageants. His Chronicle was continued by other hands, and the latter and more valuable part, that dealing with Hall's own lifetime, has been edited by C. Whibley, 1904.

Hall, Joseph (1574–1656). English prelate and author. Born at Bristow Park, Ashby-de-la-Zouch, July 1, 1574,

and educated at Emmanuel College, Cambridge, of which he became fellow, he held livings at Halstead and Waltham, was dean of Worcester, 1616, bishop of Exeter, 1627–41, and bishop of Norwich, 1641–47. He accompanied Sir Edmund Bacon to Spa, 1605; was chaplain to Henry prince of Wales, 1608; deputy at the synod of Dort, 1618.

Though devoted to the Church of England, he was accused by Laud of puritanical leanings, and his defence of episcopacy, 1640, caused an attack by five Puritans whose initials formed the joint pseudonym of Smectymnuus, and involved him in controversy with Milton. Impeached and imprisoned 1642, his estate was sequestered and his house plundered. He described his trials in Hard Measure, 1647. He died in poverty at Higham, near Norwich, Sept. 8, 1656.

He wrote in couplets a series of epigrammatical satires, after the manner of Martial and Juvenal, entitled Virgidemiarum (gathering of rods), 1597–98. The first of their kind in English, they attacked current poetical taste, neglect of polite learning, and contemporary manners and fashions. Felicitous in phrasing, racy in their wit and humour, and intrepid in invective, they overemphasised human frailty but are valuable for their portraiture of men and manners of the time. Author of devotional works generally known as his Contemplations, Hall anticipated Earle and Overbury in the writing of Characters. Wotton calls him Our English Seneca. See Works, ed. P. Wynter, 1863; Poems, ed. A. B. Grosart, 1879; Meditations, ed. C. Sayle, 1902; Life, G. Lewis, 1886



Joseph Hall,
English prelate

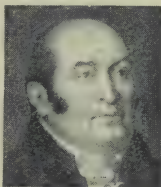
From a picture in Emmanuel Coll., Camb.

Hall, MARIE (b. 1884). British violinist. Born at Newcastle-on-Tyne. April 8, 1884, she was the daughter of a harpist, and as a child showed exceptional gifts as a violinist. After studying with various teachers in England she went to Sevcik, at Prague, under whom she developed her wonderful technique. Returning to England in 1903, she took her place in the front rank of living violinists, and made various tours in almost all parts of the world. In 1911 she married Edward Baring.



Marie Hall,
British violinist
Russell

Hall, ROBERT (1764-1831). British Baptist. Born at Arnesby, Leicestershire, May 2, 1764, son of a Baptist pastor, he was educated at Bristol and King's College, Aberdeen. Assistant to Caleb Williams, Broadmead Chapel, Bristol, and classical tutor in the Bristol seminary, 1785-90, he was pastor at Cambridge, 1791-1806, and after periods of mental failure, 1804-6, was pastor at Harvey Lane, Leicester, 1807-25. He died at Bristol, Feb. 21, 1831.



After J. Flowers

A Calvinist after the type of Andrew Fuller, though opposed to Fuller on the subject of communion, and an ardent supporter of missions, his sermons remain among the classics of the modern pulpit. He was the author of *Christianity Consistent with a Love of Freedom*, 1791; *Apology for the Freedom of the Press*, 1793; *Modern Infidelity considered with Respect to its Influence on Society*, 1800; and *The Advantage of Knowledge to the Lower Classes*, 1810. He was a conductor of *The Eclectic Review*. See *Works*, ed. O. Gregory, 1831-33, 11th ed. 1853; memoir, E. P. Hood, 1881.

Hall, SAMUEL CARTER (1800-89). British author and editor. The 4th son of Col. Robert Hall (1753-1836), of Topsham, Devon, he was born at Geneva barracks, Watford, May 9, 1800. He came to London in 1822, was called to the bar at the Inner Temple, was gallery reporter for *The New Times*, and established and edited *The Amulet Annual*, 1826-37. He

edited *The New Monthly* 1830-36, founded and edited *The Art Journal*, 1839-80; wrote with his wife Anna Maria, née Fielding (1800-81), *Ireland, Its Scenery, Character, etc.*, 1841-43, and was the author of *Memories of Great Men and Women*, 1871, and *Retrospect of a Long Life*, 1883. He died March 16, 1889.



Mrs. S. C. Hall,
British author

Irish Life, 1838, one of the stories in which was dramatised as *Groves of Blarney*; *Stories of the Irish Peasantry*, 1857; and several novels. Husband and wife wrote or edited about 500 volumes.

Hall, SIR WILLIAM REGINALD (b. 1871). British sailor. He entered the navy in 1883, and became a specialist in gunnery. He was senior staff officer of the Excellent in 1898, in which year he was promoted commander. Inspecting captain of mechanical training establishments, 1906-7, he was naval assistant to the controller of the navy, 1911-13. In Oct., 1914, he was appointed director of the intelligence service of the war staff at the Admiralty. He resigned from the Admiralty Jan. 1919, and was elected M.P. in 1919 and 1922. In 1923 he became principal agent of the Unionist party, resigning Feb. 1924.

Hallam, ARTHUR HENRY (1811-33). British essayist. Born in London, Feb. 1, 1811, the eldest son of Henry Hallam, the historian, he was educated at Eton and Trinity College, Cambridge, where he became intimate with Tennyson. His early death at



Samuel Carter Hall,
British author

Vienna, Sept. 15, 1833, which inspired Tennyson's elegiac poem, *In Memoriam*, cut short a career of remarkable promise. See *In Memoriam*; Tennyson.

Hallam, HENRY (1777-1859). British historian. The son of John Hallam, dean of Bristol. Hallam was born at Windsor, July 9, 1777, and educated at Eton and Christ Church, Oxford. He became a barrister, but private means, coupled with an easy post in the civil service, enabled him to devote his life to literary work. He died at Hayes, Kent, on Jan. 21, 1859.



Henry Hallam

A strong Whig, Hallam wrote many articles for *The Edinburgh Review*; but he is remembered chiefly by two monumental works. His *View of the State of Europe during the Middle Ages*, 1818, is in the nature of a general sketch of the various institutions and influences, and is still of considerable value in spite of much light thrown by recent research upon feudalism and other problems. This is less true of his *Constitutional History of England*, which deals with the period between 1485 and 1760: It is a clear and impartial account of the various constitutional changes, although to some extent it has been superseded by later scholarship. It is written by one who believed firmly in the principles of the Whigs and in the revolution of 1688 as the high tide of constitutional liberty. He also wrote an *Introduction to the Literature of Europe in the 15th, 16th, and 17th centuries*, 1838-39, and edited the *Remains in Prose and Verse of his son*, 1834.

Hallamshire. Name given to a district around Sheffield. Hallam is mentioned in *Domesday Book*, when it belonged to Earl Waltheof. Nether Hallam is the centre of the district, which has no exact limits.

Halland. Län or govt. of S.W. Sweden. It is bounded W. by the Kattegat, N. by Göteborg and Bohus, and S. by Malmöhus. Area, 1,900 sq. m. Halmstad (q.v.) is the capital and chief port. The exports include timber, granite, fish, oats, and butter. Of the rivers the most important are the Atran and the Nissa. Pop. 148,040.

Halle. Town of Germany, in Prussian Saxony. It stands on the Saale, 23 m. by rly. W.N.W. of Leipzig. An old town, Halle owes



Arthur Henry Hallam
From a bust by Chantrey



Halle, Germany. The market place looking west towards the 16th century Marienkirche and the Roter Turm, 276 ft. high

its importance to the salt industry, which still survives, though other manufactures, *e.g.* machinery, sugar, lubricants, etc., flourish.

Its chief glory is the university, founded by Frederick I of Prussia in 1694. Suppressed by Napoleon, it was re-established in 1815, and combined with that of Wittenberg. In addition to the faculty of theology, Halle University offers its students, who before the Great War numbered 2,500, training in all the usual branches of knowledge. There are a well-equipped medical school, anatomical institute, observatory, physical laboratories, agricultural institute, etc., and, besides the university library (250,000 volumes), another in connexion with the academy of natural history. In 1698 Francke (*q.v.*) established the institution bearing his name, and now including an orphan home, schools, and other means of assistance for the poor.

The market place in the old town is distinguished by the Roter Turm, the lofty belfry of a 16th century church that no longer exists. The Rathaus (14th-16th centuries) and the Marienkirche (16th century) are of interest. The most important church archaeologically is that of S. Maurice, near the salt-works, whose employees, the Hallören, retain their old exclusiveness. There was a Spartacist outbreak in Halle in 1919. Pop. 180,843.

Hallé, Sir Charles (1819-95). British pianist and conductor. Born at Hagen, Westphalia, April 11, 1819, the son of a musician, he received his musical education in Germany and France. He settled in 1836 in Paris, where he instituted

concerts of chamber music, but in 1848 came to England. In Manchester, 1893, he founded the Royal College of Music, of

which he was the first principal. He was knighted in 1888, having become a naturalised British subject. He died Oct. 25, 1895. Hallé was highly gifted as both pianist and conductor, and the performances of his Manchester orchestra reached a high standard. His recitals in London were long a feature of the musical season.

Hallé, Wilma Normann-Neruda, Lady (1839-1911). British violinist. Born at Brünn, March 29,



Lady Hallé, British violinist

Sir Charles Hallé
British musician

1839, daughter of Joseph Neruda, organist of the cathedral, she became a pupil of Leopold Jansa and made her first appearance at Vienna. She rapidly won a position among the greatest violinists. In 1864 she married Ludwig Normann, a Swedish musician, and in 1888 Sir Charles Hallé. She thus became a British

subject, and in 1901 was made violinist to Queen Alexandra. Lady Hallé died on April 15, 1911.

Halleck, Henry Wager (1815-72). American soldier. Born at Westernville, New York, Jan. 16, 1815, he was educated at West Point. He resigned from the army in 1854, but returned shortly after the outbreak of the Civil War, being given the rank of major-general. A man of great administrative ability, he did good work in reorganizing the army. In 1862 he was appointed commander-in-chief of the Federal forces, but resigned in 1864 to become chief of the staff. He died at Louisville, Kentucky, Jan. 9, 1872.

Hallefinta. Rock of exceedingly compact texture. It varies in colour from grey to black, sometimes tinged yellow, red or green. It is composed of minute particles of quartz and felspar, and occurs commonly in association with foliated rocks in Norway and Sweden.

Hallelujah or **ALLELUIA** (Heb., Praise the Lord or Praise to the Lord). Ascription of praise in the Psalms and Jewish hymns. In the N.T. it occurs only in Rev. 19. In the R.C. Church, in which formerly it was only used on Easter Sunday, it is now used at Mass, between the Epistle and Gospel, except at certain times (*e.g.* from Septuagesima to Holy Saturday, and in ferial Masses during Advent), when it is omitted as a sign of mourning. In the First Prayer Book of Edward VI Hallelujah was sung after Praise ye the Lord, from Easter to Trinity Sunday. The response, The Lord's Name be praised, was substituted in 1662.

Hallelujah Chorus. Name specially applied to the concluding chorus of Part II of Handel's oratorio *The Messiah*. The *Messiah* was first produced in Dublin, April 13, 1742, and in London, March 23, 1743. In 1743 the whole audience, with George II, rose to their feet at the beginning of the Hallelujah Chorus and remained standing throughout, establishing a custom which remains to this day. Handel is reported to have said regarding his experience when composing the chorus: "I did think I did see all heaven before me, and the great God Himself." Three felicitous quotations appear in the chorus: (1) The theme of "For the Lord God Omnipotent reigneth" is a plainsong melody of great age; (2) The theme of "The Kingdom of this World" is from the chorale, "Sleepers, wake"; and (3) "For He shall reign for ever and ever" is an adaptation of the last line of the same chorale. See Oratorio.

Haller, JOSEPH (b. 1873). Polish soldier. The grandson of Joseph Anton Haller, formerly president



Joseph Haller,
Polish soldier

of the republic of Cracow, he was educated for the army in Vienna. He distinguished himself in the Great War, especially in the campaign in Volhynia, and the battles on the Styr and Stokhod. In 1917 he organized a unit of Polish troops and led them in the campaigns in the Bukowina. He disapproved of the peace of Brest Litovsk, signed March 3, 1918, and joined a number of Poles in Bessarabia, breaking through the Austrian lines and reaching the Ukraine. There he commanded a corps, but was defeated by Von Eichorn's forces at Kamoff. He went to France in the autumn of 1918, where he commanded the Polish contingent. In April, 1919, he took the latter to Poland to oppose the Bolshevik invasion. See Poland.

Halley, EDMUND (1656-1742). English astronomer. Born in London, Oct. 29, 1656, the son of a soap boiler, he was educated at S. Paul's School, where he distinguished himself in mathematics and classics. At 17 he proceeded to Oxford, and at 20 he sailed for St. Helena to determine the positions of the fixed stars of the S. hemisphere. Completing his map in 1677, he was made a fellow of the Royal Society the following year. In 1679 and the following years he travelled extensively on the Continent, and in Paris made the first observations of the comet named after him, the return of which he afterwards predicted.

In 1684 he made the acquaintance of Newton and discussed with him the latter's investigations on gravitation, investigations upon which Halley himself had independently been engaged. The astronomer at once realized the great importance of Newton's work, and took a leading part in the publication of the Principia. In the following years he carried out a series of important investigations on trade winds and on the magnetism of the earth. His ideas on the latter

were so greatly in advance of his time that it was not until 1811 that they were properly appreciated.

In 1705 Halley published his results on the movements of comets. Appointed astronomer royal at Greenwich on the death of Flamsteed, he made a study of the motion of the moon, advocated the method of calculating the distance of the sun by measurements of the transit of Venus, and detected inequalities in the motions of Saturn and Jupiter. He died at Greenwich, Jan. 14, 1742.

Halley's Comet. The most notable of all the comets whose periods are known. It takes 76 years (approximately) to travel round its orbit, which is a very elongated ellipse with one extremity beyond the path of the planet Neptune. At its return, in 1682, it was observed by Flamsteed, Halley, and Hevelius. Halley computed its orbit and found that it was identical with the comet that had appeared in 1607 and before that in 1531; and he predicted its return in 1757. He did not live to see his prediction fulfilled, but his comet duly returned nearly two years late on account of disturbances from its path by the planets. Its next return in 1835 was computed by a number of astronomers. In 1910 its reappearance was chiefly remarkable for the accuracy of the calculations of P. H. Cowell and A. C. D. Crommelin of Greenwich Observatory for the dates of the comet's appearance, path, and perihelion passage. Its perihelion passage was computed as likely to occur on April 17th, 1910. The date was April 19th.

Crommelin in a detailed study of previous appearances of the comet carried back its history with definiteness to 240 B.C. The other appearances were recorded in 87 B.C., 11 B.C., and in A.D. 66, 141, 989, 1066, in which connexion it is depicted on the Bayeux Tapestry, 1145, 1223, 1301, 1378, 1456, 1531, 1607, 1682, 1759, and 1835. See Comet.

Halliburton, WILLIAM DOBSON (b. 1860). British physiologist. He was born in London, June 21, 1860, studied at London University, and in 1889 was appointed professor of physiology at King's College, London. Member of the Council of the Royal Society, 1898-1900, and 1903-4, he was president of the

physiological section of the British Association in 1902. His principal publications are: Text Book of Chemical Physiology and Pathology, 1891; Essentials of Chemical Physiology, new ed. 1919; Handbook of Physiology, 14th ed., 1919.

Halliwell-Phillips, JAMES ORCHARD (1820-89). British Shakespearean scholar.



J. O. Halliwell-Phillips,
British scholar

He was born at Chelsea, June 21, 1820, and educated at Jesus College, Cambridge. The name Phillips (which was that of his first wife) was added in 1872. At first devoting himself to earlier English literature generally, he eventually confined himself to Shakespeare, editing and annotating the texts in 16 folio volumes, and in 1881 publishing his Outlines of the Life of Shakespeare, which reached its 8th edition in 1889. He died near Brighton, Jan. 3, 1889.

Hall Land. Division of N.W. Greenland. It lies N. of Washington Land and S.W. of Peary Channel. On the N. it faces Lincoln Sea, and on the W. Robeson Channel separates it from Grant Land. It lies about lat. 82° N.

Hall Mark. Set of marks stamped upon gold and silver articles at the Goldsmiths' Hall, London, or assay offices, to attest the genuineness of the metal and the date of its testing. The series consists usually of five marks: (1) the standard mark, indicating the standard of the metal, e.g. 18 for gold of 18 carats; (2) the hall mark, indicating the town where the assaying has been done, e.g. a leopard's head crowned for London, an anchor for Birmingham; (3) the duty mark (used 1784-1890), showing that the necessary duty had been paid; (4) the date mark, a letter of the alphabet for each year, varying in design in cycles; (5) the maker's mark, now his initial letters, though early pieces have sometimes emblems, as a rose or a star. The assay offices are at London, Birmingham, Chester and Sheffield, Edinburgh and Glasgow, and Dublin. The York office was closed in 1856, Exeter in 1882, and Newcastle in 1886.

One of the earliest ordinances in connexion with testing the amount of alloy in gold and silver was that of Henry III in 1238. The privilege of assaying was granted to the Goldsmiths' Company by Edward I in 1309; by Edward III in 1327



Edm. Halley





















From portrait belonging to the Royal Society

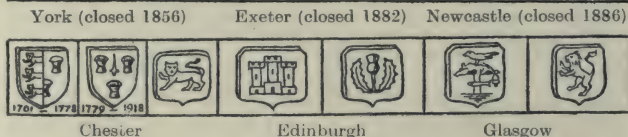
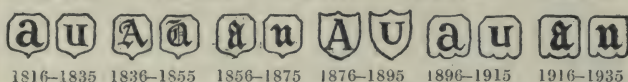
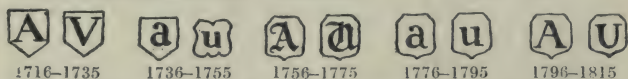


W. D. Halliburton,
British physiologist

Russell

London Hall Marks,
from 1300 to present dayMethod of
Stamping

1697	1701	1706	1711
			
			
			
			
			
1700	1705	1710	1715

London Date Marks,
1697-1715

Chester

Edinburgh

Glasgow



Dublin

Birmingham

Sheffield

Hall Marks. On silverware these consist of the maker's initials, the standard marks of the assay office, and date stamp. Until 1890, the duty stamp was also added. Date stamps run in cycles of 20 years, represented by the first 20 letters of the alphabet, less i. Standard marks of the provincial offices, both closed and active, are given above, in addition to the London hall marks. In the series 1786-85, the date shield was changed after 1737

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enjoined them to place on the tested metal a "stamp of a punchcone of a lion's head." Numerous other orders, regulations, etc., include those of Henry VII, 1504, Elizabeth, 1597, and William III, 1697-8. The first Scottish edict on such marks is that of James II, 1457, and in Ireland a charter of Charles I gave the rights to the Corporation of Goldsmiths of Dublin in 1638. Counterfeiting, etc., of hall marks is a felony. See *Assaying*; *Goldsmiths' Company*; consult also *Hall Marks* on Plate, W. Chaffers, 7th ed. 1891; *Old English Plate*, Wilfred Cripps, new ed. 1901; *English Goldsmiths and Their Marks*, C. J. Jackson, 1905; *The Silver and Sheffield Plate Collector*, W. A. Young, 1919.

Hallow-e'en. Popular Scottish name for Oct. 31, the eve of All Saints Day. Also called All Hal-

lows Eve, Holy Eve, Cake Night (in Yorkshire), and, in the N. of England, Nutcrack Night, from early times it has been associated with many superstitions and customs, a number of which are referred to in Burns's poem of this name. Hallow-e'en is supposed to be a survival from the ancient festival of Pomona, the

Roman goddess of fruit trees. Apples and nuts play a large part in the pastimes indulged in, the nuts being used for purposes of divination. There still lingers a belief that children born on Hallow-e'en possess supernatural gifts.

Hall Peninsula. Projection on the S.E. of Baffin Island between Cumberland and Meta Incognita peninsulas, divided from the latter by Frobisher Bay.

Hallstatt. Village of Austria, in Upper Austria. It lies at the S. end of Hallstätter See, at a height of over 1,600 ft., 37 m. S.E. of Salzburg. It is famous for its salt mine. The church has a 15th century altar of carved wood, and there is a museum with Celtic and other antiquities. Pop. 800.

In the vicinity a cemetery of 3,000 graves, discovered 1846, contained the human remains and grave-goods of prehistoric settlers. They worked the neighbouring salt deposits, tended cattle, practised agriculture, and benefited by the commercial intercourse along the amber route between the Baltic and the Adriatic. The presence 40 m. away of the famous Noric mines enabled them to develop the use of iron instead of bronze. The settlement accordingly gives its name to the first period of Iron Age culture, divisible into early Hallstattian (850-600 B.C.), with a gradual transition from bronze; and late Hallstattian (600-400 B.C.), with a fuller use of iron, and much Oriental influence.

Among 5,816 objects from the earlier excavations (1847-64), 64 were gold, 3,574 bronze, 593 iron, 270 amber. The Noric iron needed no tempering; its exploitation was effected in four stages—for ornamenting bronze, edging bronze tools and weapons, imitating bronze types, and developing new types in iron. Bronze buckets, painted pottery, Phoenician glass, ivory, gold-thread embroidery, and fibulae mark a high standard of luxury and taste.



Hallstatt, Austria. The village on the shore the Hallstätter See

Hallström, PER AUGUST LEONARD (b. 1866). Swedish author. Born in Stockholm, Sept. 29, 1866, after finishing his training as a civil engineer in 1886, he spent a couple of years in America doing chemical work. His first publication was a book of poems, 1891, but his proper medium was prose, and he wrote a number of novels and short stories of great charm, among them *Wild Birds*, 1894; *Purple*, 1895; *An Old Story*, 1895; *The Diamond Ornament*, 1896; *Spring*, a Novel of the Nineties, 1898. His style is somewhat involved, but full of individuality; and his rich imagination and keen sympathetic insight into modern life and problems won for him a large circle of readers, both in Sweden and abroad.

Hallucination (Lat. *hallucinari*, to wander in mind). Condition of mind in which a person sees something that has no real existence within his range of vision. It should be carefully distinguished from illusion, in which a real object is seen, but is wrongly interpreted. Thus, seeing a ghost when nothing is there is hallucination; but mistaking a tombstone in the dusk for a ghost is illusion.

Hallucination is unquestionably subjective: i.e. the object seen only exists in the mind of the person seeing it. In normal vision the rays of light impinging on the retina of the eye produce an impression which is conveyed to the brain by the optic nerves, and a mental image is thus formed of the object from which the rays of light proceed. It is easy to produce this mental image without the action of the eye. This may be done quite unconsciously when the thoughts are abstracted, and the mental image may be so vivid that the person believes he actually sees the object. See Apparition; Dream.

Halluin. Town of France. It stands on the Lys, 13 m. N.N.W. of Lille, in the dept. of Nord, being on the Belgian frontier. An old place, it was once the seat of a noted family. It has an interesting church. The chief industries are the manufacture of textiles, and there are also distilleries and iron-foundries. During 1914-18 the town was in the occupation of the Germans. Pop. 16,600.

Halma (Gr., leap). Game played by two or four persons on a board divided into 256 squares, with men in the form of chess pawns. The men are placed in four spaces, termed yards, one at each corner of the board, and the object of the player is to get his own men into his adversary's yard, the player or side first accomplishing this win-

ning the game. Moves are made by the step, a move of one square in any direction; and by the hop, in which a piece may jump over any other piece of its own or any other colour in any direction, and may continue so doing, provided there is a vacant square for it next to the piece hopped over. With two players, each has 19 men coloured black and white respectively. In the four-handed game, each player has 13 men only, the colours being white, black, red, and green. Sometimes four persons play in partnerships of two.

Halmahera. Alternative name for the island in the Malay Archipelago better known as Gilolo (q.v.).

Halmstad. Seaport town of Sweden, capital of the govt. of Halland. It stands on the Kattegat, 76 m. S.S.E. of Gothenburg, with two harbours and a roadstead. An important rly. junction, it has steamer communication with Copenhagen, Lübeck, and other ports. The 15th century castle is the residence of the provincial governor, and there are a 15th century church (restored) and a museum. Granite, timber, paper, fish, butter, oats, and potatoes from the S. of Sweden are exported. There are shipbuilding yards, cloth, flour, jute and saw mills, sugar refineries, and breweries. In the vicinity are mineral and sea-water baths. Here, in 1676, Charles XI defeated the Danes. Pop. 18,297.

Halo. Luminous ring round the sun or moon. Halos, when clearly defined, are seen to be coloured,



Halo round the sun caused by ice crystals in high clouds

red on the inside and blue on the outside. Usually about 44° in diameter, they are due to the sun or moon being seen through a thin sheet of cirro-stratus clouds, which owing to their elevation are composed of tiny ice crystals. It is the bending or refraction of the light when passing through these ice crystals that causes the halo. In polar regions, where ice crystals are usually present in the air, very brilliant halos are common. Despite popular belief to the contrary, halos have no definitely determined significance in connexion with the weather. The word is derived from Gr. *halōs*, threshing-floor, a space circular in form, round which the oxen trod.

Halo or **NIMBUS**. In art, a disk or circle of light surrounding the head in representations of divine personages and saints in sacred



Halo as depicted by famous artists: 1. Fra Angelico, 1387-1455. 2. Botticelli, 1444-1510. 3. Raphael, 1483-1520. 4. Raphael. 5. Doré and later pictures. 6. Raphael, the floating halo

and legendary art. The nimbus of God the Father had the form of a single triangle, or of one triangle superposed on another, with divergent rays and, occasionally, the Greek letters α (alpha) and ω (omega) in the right and left lower corners of the superior triangle. The halo of the Saviour showed, within the circle, parts of the arms of a cross, the rest of which was concealed by the head. The Virgin's head was surrounded either by a plain circle or by a circle of stars, while the saint's halo was usually a circle of rays. A square nimbus indicated that the person so adorned was living when the painting was made. The halo is not unknown in sculpture, especially in Indian art. Among the Hindus it took various shapes. For instance, the hair of the modelled image might be designed as streaming, halo-like, from each side of the head. See Saint.

Hal of the Wynd. Character in Scott's novel *The Fair Maid of Perth*. He is also called Henry Gow and the Gow Chrom (the bandy-legged smith). His name Hal or Henry of the Wynd, is applied to him because he lived in the Wynd of Perth. Known as the best armourer that ever made sword, and the truest soldier that ever drew one, his fear that Catharine Glover had been promised to Conachar (Eachin MacIain) made him espouse the cause of Clan Chattan against Clan Quhele, in the famous battle of the North Inch. Four months after the battle Hal of the Wynd and Catharine are married.

Halogens (Gr. *hals*, salt; *gen*., to produce). Name applied by Berzelius to a group of closely allied elements, fluorine, chlorine, bromine, and iodine. The salts of these elements are known as haloid salts. Each of the halogens is monatomic, and they exhibit well-marked gradation in their properties according to the atomic weights of the elements.

Haloragaceae. Natural order of herbs and shrubs. Mostly perennial, they are widely distributed throughout the world. Many of them are marsh or aquatic herbs, like the mare's-tail (*Hippuris*). The flowers are mostly minute, the sexes separate. The plants have no economic importance.

Hals, FRANS (c. 1580-1666). Dutch painter. He was born, probably at Antwerp, the son of Pieter Hals Clarz. He probably studied under Adam van Noort at Antwerp, and afterwards with Van Mander at Haarlem. His first known work of importance is the group of the S. George's Shooting Guild of Haarlem, now in the Haar-

lem museum; it was painted in 1616, and is one of seven large pictures of contemporary guilds. The artist's extraordinary gift for seizing and expressing a fleeting human emotion is nowhere better shown than in *The Laughing Cavalier*, in the Wallace collection.

The National Gallery possesses five pictures by Hals, but the greatest works of his brush are in Dutch galleries, and it is often said that Hals cannot be appreciated without a visit to Haarlem, where there are ten paintings in the municipal museum, representing all periods of his activity up to the last year of his life. The Ryks museum, Amsterdam, the Hague gallery, and the Louvre have also good examples. For generations his work was held of small account; one of his portraits, now in Berlin, changed hands in 1786 for five shillings.

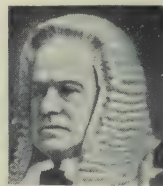
Hals was twice married. His first wife died in 1615, the victim of his ill-treatment; the second,



Frans Hals, Dutch painter, self-portrait
Haarlem Museum

Lysbeth Reyniers, lived with him for nearly fifty years and bore him five sons, all of whom became artists. During his later years Hals lived on an allowance from the municipality of Haarlem, eked out by the proceeds from a teaching studio he had started. He died at Haarlem. See Descartes; Dutch Art.

Halsbury, HARDINGE STANLEY GIFFARD, 1st EARL OF (1823-1921). British lawyer. Born Sept. 3, 1823,



Halsbury
Fry & Son

of a Devonshire family, he was educated at Merton College, Oxford. He became a barrister, having hereditary connexions with that profession, and after fifteen years of steady practice, especially in

criminal cases, was made a Q.C. in 1865. In 1875, not yet having secured a seat in Parliament, he was made solicitor-general by Disraeli, and in 1877 he entered the House of Commons as M.P. for Launceston. In 1885 he was created a peer, as Baron Halsbury, and was made lord chancellor. He filled that office throughout the Conservative ministries of 1886-92 and 1895-1905.

In 1898 he was made earl of Halsbury and Viscount Tiverton. He was high steward of Oxford University from 1896 onwards. Halsbury was remarkable for his physical vigour. When over 80 he edited *The Encyclopaedia of the Laws of England*; when over 90 he sat as a judge in the House of Lords. Although not a profound lawyer, he was an able judge. He died Dec. 11, 1921. Pron. Halsbury.

Halsey, SIR LIONEL (b. 1872). British sailor. Born Feb. 26, 1872, he was educated at Fareham and joined H.M.S. Britannia in 1885, becoming a lieutenant in 1893. He served in the defence of Ladysmith, 1899-1900, and reached the rank of commander in 1901. Promoted captain in 1905, he commanded H.M.S. *New Zealand* during the empire cruise of that ship, which he also commanded in the action in the Heligoland Bight, Aug., 1914, and in the action off the Dogger Bank, Jan. 24, 1915. He was on Jellicoe's staff in the Iron Duke in the battle of Jutland, May 31, 1916. In 1917 he became third sea lord, and in Oct., 1918, was appointed to command the Australian navy. Halsey accompanied the prince of Wales in the *Renown* as chief of staff, March-Oct., 1920. He became comptroller and treasurer to the prince in Dec. of that year. He was knighted in 1918 and promoted vice-admiral in 1921.

Hälsborg. Alternative spelling of the Swedish town better known as Helsingborg (*q.v.*).

Halstead. Urban dist. and market town of Essex, England. It stands on the Colne, 15 m. N.W. of Colchester, on the Colne Valley and Halstead Rly. The church of S. Andrew dates from the 14th century, and contains stone effigies of two unknown knights and brass effigies of members of the Bourchier family. Other buildings include the town hall, corn exchange, and cottage hospital. Silk and



Sir Lionel Halsey.
British sailor
Russell

crape are manufactured, and there are brass and iron foundries, breweries, and a tannery. The council owns the waterworks and public baths, and maintains public gardens. Market day, Tues. Pop. 6,264.

Halton. Village of Buckinghamshire, England. It is on the Wendover Canal, 4 m. S.E. of Aylesbury. During the Great War a military camp was established here which, in 1917, was taken over from the war office and used as a technical training centre for men and boys of the air service. After the war, in addition to being used as a recruiting depot, training centre, and record office of the R.A.F., it became the headquarters of the Air Force Staff College.

Haltwhistle. Market town and parish of Northumberland. It stands on the S. Tyne and is a station on the N.E. Rly., 16 m. W. of Hexham. The Roman wall runs near it, and many antiquities have been found in the neighbourhood. The chief industry is coal-mining. Market day, Thurs. Pop. 4,000.

Ham. In anatomy, the back part of the leg behind the knee-joint, and, secondarily, the thigh and buttock of any animal. The word is applied particularly to the thigh of a pig, salted, smoked, and cooked. The thigh is pickled in brine made of water, salt, salt-petre, and a little sugar, or simply rubbed with salt. When sufficiently salted it is hung for several days on an upper floor of a smoking house, the smouldering fire of wood or peat being on the lowest floor. It can be boiled, or baked in a crust of flour and water. Wiltshire and Yorkshire hams are the best. Hams are exported from Westphalia and Chicago.

Ham. Urban dist. of Surrey, England. A residential suburb of London, it stands between Twickenham, N., and Teddington, S., and is bounded on the E. by Richmond Park. The manor was given by Athelstan to his chief alderman, Vulgar, 931; and, after being in

the possession of Francis, 1st Viscount Lovell, Anne of Cleves, Henry prince of Wales, and Charles I, was granted to John Maitland, 5th earl of Lauderdale, and his wife, Elizabeth, countess of Dysart.

Facing the Thames, in the parish of Petersham, is Ham House, seat of the earl of Dysart, built 1610 on the site of the home of Vulgar by Sir Thomas Vavasour. It was the scene of the secret meetings of the Cabal (*q.v.*) and the birthplace of John Campbell, 2nd duke of Argyll. Notable for its art collection, it inspired the vision of the haunted house in Hood's poem, *The Elm Tree*. The meadows, known as Ham Walks, extend from Ham House to Twickenham Ferry, are mentioned in Thomson's *The Seasons*, and were a favourite haunt of Swift, Pope, and Gay. Ham Common, 20 acres, is between Richmond Park and the road from Petersham to Kingston. S. Andrew's Church, on the S. side of the common, dates from 1832.

Ham is not to be confused with East Ham and West Ham in E. London. There was another Ham House in Portmore Park, Weybridge, which was given by James II to Catherine Sedley, who married the 1st earl of Portmore. Pop. 1,435.

Ham. Town of France. It stands on the Somme, in the dept. of the Somme, 36 m. from Amiens. It is famous for its castle, one of the most formidable of its kind. This was founded in the 10th century, but the present building dates mainly from the 13th century, with improvements of the 15th. A feature is the donjon, or constable's tower, one of enormous strength, having walls 35 ft. thick. This was long used as a prison.

The church of Notre Dame is the successor of an old building, most of which was burned in 1760. Erected to serve the abbey of S. Augustin, its 12th century crypt survives. The town has a library, a belfry, and a small museum. During the Great War it was in the occupation of the Germans from Sept., 1914, until March,

1917, when they heavily mined it after evacuating it in their retreat to the Hindenburg line. Retaken by the Germans in March, 1918, it was recovered by the French on Sept. 6 of that year. Pop. 3,300. See Somme, Battles of the.

Ham. One of the sons of Noah (Gen. 9 and 10). He is said to have been the ancestor of the Ethiopians, Egyptians, and the nations of N. Africa generally. The name means hot or black, and is also the ancient name for Egypt, to which country it is applied in Psalms 105 and 106.

Hamadan. City of Persia and capital of a prov. of the same name. It is about 180 m. S.W. of Teheran, and is built on the site of the ancient Ecbatana. Long a place of importance as a centre of trade on the great road through Kermanshah to Khanikin and Bagdad, and also with Teheran and the Caspian, it manufactures leather goods, carpets, and silks. It contains the tomb of Avicenna, and, according to tradition, those of Esther and Mordecai. During the Great War it was the scene of operations, of the Russians and the Turks in



Ham, France. The castle from which Louis Napoleon escaped in 1846 after 6 years' confinement

Persia. It was occupied by the British in April, 1918, on the march to the Caspian. Pop. 35,000. Pop. of prov. about 350,000.

Hamadryad OR KING COBRA. Large species of the cobra, found in India, Malaya, and the Philippines. It is extremely venomous and of

fierce and rather aggressive disposition. In colour yellow or yellowish brown, with black bands, it attains a length of about 14 ft. As it feeds to a large extent on other snakes it is in some degree a useful reptile. See Snake.



Hamadryad. Haed of the poisonous snake



Ham House, Surrey. The 17th century house of the earl of Dysart

Hamadryads (Gr. *hama*, together with; *drys*, tree). In Greek mythology, nymphs that presided over trees. Their lives were only co-existent with the lives of the trees in which they dwelt. See *Nymphs*.

Hamah. Town of Syria, the Hamath of the Bible, and the ancient Epiphania. Situated on the Orontes among attractive gardens and groves of palms, 110 m. N.E. of Damascus, and about 30 m. almost due N. of Homs, it has a flourishing weaving industry and a fair amount of general trade, which is helped by its being on the Syrian rly. An early Canaanite stronghold, it was subdued by Shalmaneser III, Tiglath-pileser III, and Sargon II. It was renamed Epiphania after Antiochus IV, moslemised A.D. 639, and captured by Tancred and Saladin. Five basalt stelae, now in Constantinople, bear Hittite inscriptions. Pop. 45,000, one-fourth Greeks. See *Hittites*.

Haman. Chief minister and favourite of Ahasuerus, king of Persia. Because Mordecai, a Jew,



Haman condemned by Ahasuerus
From an engraving after Rembrandt

paid him no reverence, he resolved to destroy Mordecai and all Jews in the kingdom. Without mentioning Mordecai or the Jews, he obtained from the king a decree requisite for his purpose. The plot, however, was exposed by Esther, cousin and adopted daughter of Mordecai, with the result that Haman was hanged on the gibbet he had prepared for Mordecai.

At the feast of Purim it became a custom among the Jews to hang Haman in effigy; and to-day when the Book of Esther is read in the synagogues the name of Ahasuerus' one-time favourite is received with contumely. The gallows is said to have been 50 cubits high, hence the phrase to hang 'as high as Haman. See *Esther*; *Mordecai*.

Hamann, JOHANN GEORG (1730-88). German writer. Born at Königsberg, Aug. 27, 1730, in 1759 he made his home at Königsberg and the rest of his life was passed in study and writing, while earning a living as a clerk. His books were never very popular, but his influence was considerable, and he was called the magician of the north. He was very friendly with Goethe, Herder, and other thinkers. His writings, which deal with philosophy and the philology and literature of the East, were published in 7 vols., 1821-43; they reveal him as a man of deep religious feeling. He died June 21, 1788.

Hamasa. Word meaning brave and given to an anthology of Arabic poetry. This was collected by Abu Tamman in the 9th century and is divided into ten books. The first book deals with the heroes of the past, hence its name, and remaining ones with love, travel, and the like. Some of the poems have been translated into English by Sir A. C. Lyall in *Ancient Arabic Poetry*, 1885.

Hambach. Village of Bavaria. It stands in the Hardt, 15 m. from Spire, in the centre of a vine-growing region. It is chiefly noted for its castle, where, May 27, 1832, the revolutionary movement in Bavaria was inaugurated by a meeting attended by 30,000 persons. This is also called the Maxburg and stands on a hill over 1,000 ft. high. Built by the emperor Henry II, the early building was destroyed by the French in 1688. Maximilian II, king of Bavaria, replaced it in the 19th century by a modern residence.

Hambleden, WILLIAM FREDERICK DANVERS SMITH, VISCOUNT (b. 1868). British business man. The eldest son of W. H. Smith (*q.v.*), he was born Aug. 12, 1868, and educated at Eton and New College, Oxford, where he distinguished himself as an oarsman. After his father's death in 1891 his mother was created Viscountess Hambleden, and on her death in 1913 their son succeeded to the title. He was already head of the firm of W. H. Smith & Son, and in 1891 had succeeded his father also as Unionist M.P. for the Strand division, retaining his seat until 1910. An officer of the Devon Yeomanry, he served during the Great War in Gallipoli and Egypt.



1st Viscount
Hambleden,
British business man
Russell

Hambledon. Village of Hampshire, famous for its cricket club. It is 6 m. N.E. of Fareham. Formed about 1750, this club was the first of its kind in England. The games are played on two downs, Windmill and Broad Halfpenny. The club was at the height of its fame about 1800, when David Harris and William Beldham played for it, and the Hambledon men were strong enough to encounter an all-England eleven. The village gives its name to the Hambledon Hunt. There is another Hambledon in Surrey, 3 m. from Godalming.

Hambourg, MARK (b. 1879). British pianist. Born at Bogutchar, S. Russia, May 30, 1879, he studied in Vienna. He made his first public appearance in Moscow in 1888, and afterwards toured the world. Hambourg became a naturalised British subject and married a daughter of Lord Muir-Mackenzie.



Mark Hambourg,
British pianist

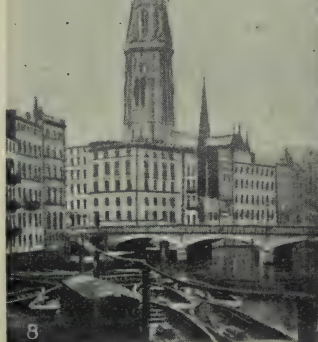
Hamburg. City and seaport of Germany. It is also the name of a free state. It stands on the Elbe, 75 m. from Cuxhaven



Hamburg arms

and 178 from Berlin, and is served by the Prussian state rly. system, having a central and other stations. Contiguous with it are the towns of Altona and Ottensen, which, however, are part of Prussia. Suburbs proper include S. Georg and S. Pauli, which were separate municipalities until after 1870.

Hamburg has an old town and a new town, formerly divided by the river Alster which has been closed to form two lakes, and these, the Inner Alster and the Outer Alster, are features of the city. They are divided by the Lombards Bridge and by remains of the old fortifications. The Inner Alster is used largely for pleasure, steamers plying regularly up and down. The city has another river, the Bille. Through its older part flow streams which are used to carry goods to the docks, and on this account Hamburg has been likened to Venice. Around the Inner Alster is modern Hamburg, its fine broad streets lined with hotels, banks, shops, and the like. Of the thoroughfares may be mentioned the Alsterdamm, the Jungfernstieg, and the Neuer Wall.



1. The Law Courts. 2. The Inner Alster. 3. The Jungfernstieg, a promenade flanking the Alster. 4. The Art Gallery (Kunsthalle), built 1867-69. 5. The Jungfernstieg, showing the landing stage. 6. Warehouses

built when Hamburg was a member of the Hanseatic League. 7. Houses bordering a canal in the old town. 8. S. Nicholas Church, with spire 485 ft. in height. 9. View of the city, showing the Lombards Bridge

HAMBURG : GERMANY'S LARGEST SEAPORT AND A STATE OF THE REPUBLIC



Hamburg, Germany. Plan of the central portion of the city, including the business quarter and the principal docks

Around the outer Alster are suburbs, among them Harvestehude, Uhlenhorst, Roterbaum, Eilbeck, and Borgfelde. The chief church is S. Nicholas, with its lofty spire; it is a modern building in the Gothic style, beautifully decorated. S. Michael's is a very large building of the 18th century, also with a lofty tower. S. Peter's was rebuilt in the original style in 1844-49; it has some interesting glass. S. Catherine's and S. James's are the only old churches, the chief reason for this being the fire of 1842.

Of secular buildings the chief is the immense Rathaus (town hall). Built in 1886-95, this is in the Renaissance style. It has a great hall and some other large rooms, and is beautifully decorated; beneath it are some remarkable vaults. Near it is the exchange. The Johanneum houses the city library and a collection of antiquities. Other buildings include the customs house, law courts, and post office. There is an art gallery and several museums, and botanical and zoological gardens. Chief of the educational establishments is the new university. Of the squares may be mentioned the hop market and the goose market, while the city has many public memorials, notably the Hansa Fountain. It has a town and other theatres. Hamburg has a city railway and an extensive service of electric tramways. There is a meteorological station, and a general hospital at Eppendorf.

Before the Great War Hamburg was one of the greatest ports in the world. On the Elbe is an enormous extent of docks and harbours mainly constructed since 1888,

when Hamburg entered the Zollverein. The great part forms the free port, which receives goods for transit trade, those not liable to import duties. Huge granaries and emigrant sheds are features. The island of Wilhelmsburg, which here divides the Elbe into two branches, is utilised for docks, etc.

Until 1914 it was a centre for importing coal, oil, and indeed almost all that Germany needed, while it exported, not only her manufactures, but those of Austria. A great number of emigrants sailed from here. The war completely paralysed the port's trade, but after the armistice it revived, and in 1920 no fewer than 4,880 vessels entered Hamburg.

Of the manufactures shipbuilding is perhaps the chief, there being enormous yards here. Beer and spirits, tobacco and cigars, chemicals and furniture are among the many articles produced. There are many flour mills and works for making other articles of food.

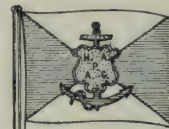
Hamburg grew up around a fortress built by Charlemagne to protect the frontiers of his empire. It was also important as a centre of Christianity, as a bishopric was established there, also in the 9th century. This became an archbishopric, and the archbishops held a high place among German ecclesiastics. After the break-up of the Carolingian empire the city passed under the rule of the count of Holstein, but it was within the limits of the medieval empire. The emperors granted privileges to the city, which about 1200 began to be an important commercial centre. It was one of the first members of

the Hanseatic League. In 1510 it was made a free city, although the king of Denmark did not formally give up his claim to be its overlord until 1768.

The city was governed by a council, and in the Middle Ages there was constant friction between the various authorities. In 1529 the citizens accepted the reformed teaching. Hamburg was fairly prosperous in the 17th century, but its greatness dates really from the industrial revolution. It became one of the chief ports for trade with America, and the invention of steam gave a great impetus to its trade. In Nov., 1918, there was rioting in the city.

The little state of which Hamburg is the capital is a republic within the German Reich. It is governed by a house of burgesses consisting of 160 members, to which an executive of 18 members is responsible. The existing constitution dates from March, 1919. The area of the state is 160 sq. m., and the pop. is 1,050,000. Outside the city of Hamburg the territory consists of several small detached portions in Holstein and Hanover, and islands in the Elbe. The only towns are Bergedorf and Cuxhaven with Ritzebüttel. In 1815 the state joined the German Bund, and in 1866 the N. German Confederation. In 1871 it entered the German Empire, within which it remained after 1918, when the constitution was made somewhat more democratic. See Hanseatic League; consult also The Hansa Towns, H. Zimmern, 1889; Chronicles of Three Free Cities, Hamburg, Bremen, and Lübeck, W. King, 1914.

Hamburg-Amerika. German steamship line. It was established in 1847 to run cargo boats between Hamburg and New York. Its size



Hamburg-Amerika Steamship Line flag, blue and white with yellow shield

increased rapidly after the union of Germany in 1871 and especially later under the control of Albert Ballin, until in 1914 it was said to be the largest steamship company in the world. It had services from Hamburg to Dover, but its main operations were in the American trade, its steamers going regularly, not only to New York and the ports of N. America, but also to those of S. America, Central America, and the W. Indies. Its headquarters were at Hamburg. The Great War interrupted operations, but they recommenced again after the armistice.

Hamburger Nachrichten (Hamburg News). German daily newspaper founded in 1792. It was Bismarck's confidential organ after his retirement from the chancellorship in 1890, and became violently Anglophobe.

Hamel. Village of France, in the dept. of Somme. It is 3 m. E.S.E. of Corbie (*q.v.*) It was captured by the Germans in their spring offensive of 1918, and retaken by the Americans on July 4, 1918.

Hamel, CAPTURE OF. American exploit in July, 1918, during the Great War. Part of the American army marked Independence Day, July 4, 1918, by attacking Hamel and Vaire Wood, in combination with some Australian forces. The American troops, which lay N. of Villers-Bretonneux and S. of the Somme, were the 33rd Illinois National Guard Division, most of them drawn from Chicago. Four companies participated in the action, which was their first. After an intensive artillery bombardment, the Americans with the Australians advanced under cover of many tanks on a front of 4 m., the U.S.A. soldiers being engaged principally in the assault on Hamel. Ground to a depth of 1½ m. was captured, and Hamel and Vaire Wood were taken, with 1,500 prisoners, 20 trench mortars, and 100 machine guns. One American serjeant, single-handed, captured and brought in seven Germans.

Hamel, GUSTAV (1889-1914). British aviator. Educated at Westminster, he took up aviation in its early days, and in 1911 won the Brooklands-Brighton air race and, the following year, the Aerial Derby around London. In 1913 he won the Daily Mail prize in the Greater London race, covering 94½ m. in 75 mins. 49 secs. In May, 1914, he was returning on a new Morane-Saulnier monoplane from Paris to London when he was lost, no trace of himself or his machine ever being found.



Gustav Hamel,
British aviator

Hameln. Town of Germany, in the Prussian prov. of Hanover. It is situated on the Weser, above the junction of the Hamel, which flows through the town, with the main stream, 25 m. S.W. of Hanover. Its fame is largely connected with the legend of the Rattenfänger or Ratcatcher, known to English readers through Browning's poem *The Pied Piper of Hamelin*. Ac-



Hameln, Germany. The Ratcatcher's House, built in 1602, the reputed home of the legendary ratcatcher

cording to one theory the story had its origin in an outbreak of dancing mania among the children of Hameln in 1284. The principal church is the 14th century minster, dedicated to S. Boniface, restored 1870-75. The industries include sugar-refining, spinning, and milling, a large river trade is carried on, and there are important salmon fisheries.

Hameln grew up round the old abbey of S. Boniface, and in 1259 belonged to the bishopric of Minden, passing in 1277 to Brunswick, after which it became a member of the Hanseatic League. It fell to the Swedes in 1633, and on two subsequent occasions, 1757 and 1806, to the French, finally becoming a Prussian town in 1866. Pop. 22,061.

Hamerling, ROBERT (1830-89). Austrian poet. He was born at Kirchberg, Lower Austria, Mar. 24, 1830. As a student at Vienna he shared in the troubles of 1848-49, but escaped arrest, and in 1855 was appointed lecturer at Trieste. Owing to ill-health he retired on a pension in 1866 and lived an invalid's life at Gratz, where he died July 13, 1889.

The most notable of his volumes were *Sinnen und Miinnen* (Meditations and Love), 1860; *Das Schwanenlied der Romantik* (The Swansong of Romanticism), 1862; *Ahasver in Rom* (Ahasuerus in Rome), 1866; *Der König von Sion*



Robert Hamerling,
Austrian poet

(*The King of Sion*), 1869; *Amor und Psyche*, 1882; *Blätter im Winde* (Leaves in the Wind), 1887; and *Homunculus*, 1888.

Hamerton, PHILIP GILBERT (1834-94). British critic and etcher. Born at Laneside, Shaw, near Oldham, Sept. 10, 1834. His mother died a few days later, and at ten he was an orphan. His guardians designed him for holy orders, but he chose painting as a career.



Philip Gilbert Hamerton,
British critic

Elliot & Fry

With the keenest sympathy for the fine arts, he showed no remarkable talent for painting. But in search of landscapes he visited Scotland, and in the Isles of Loch Awe, 1855, he made his first appearance as a poet. In 1857 he was back encamped at Loch Awe; but the frank and fascinating story of that experience and later encampments, in the company of his young French wife, as related in *A Painter's Camp in the Highlands*, 1862, caught the fancy of the public.

As art critic of *The Saturday Review*, and editor of *The Portfolio*, he became an accepted authority on art, and like Ruskin he gave much attention to social philosophy, *The Intellectual Life*, 1873, being one of the classics of the Victorian era. Etching and Etchers, 1868, and *The Graphic Arts*, 1885, are two of his many works that stand out beyond the mass of art criticism of his time. Married to a Frenchwoman, Eugénie Gindriez, he lived many years in France, and wrote with authority on that country and its people. He died at Boulogne-sur-Seine, Nov. 6, 1894. See Philip Gilbert Hamerton: an Autobiography and a Memoir by his Wife, 1897.

Ham Hill. Elevation in Somersetshire, 4 m. W. of Yeovil, alternatively called Hamdon. Covering an area of about 210 acres on the summit is an ancient British earthwork 3 m. in circumference, in a good state of preservation and yielding interesting traces of British and of Roman occupation. Valuable building stone is quarried on the hill.

Hami. Town in the N.E. of Sinkiang (Chinese Turkistan), on the road from Peking to Kashgar. Established on an oasis in the desert, Hami was captured from the Tartars in 1477. It is an important trading centre, and forms a meeting ground of the Buddhist and Moslem worlds. Pop. 5,000.

Hamilcar. Name of several famous Carthaginians. (1) Son of Mago, one of the suffetes or supreme magistrates. Having invaded Sicily 480 B.C. with a large army of mercenaries, he laid siege to Himera, but was utterly defeated by Gelon (*q.v.*). Hamilcar himself was slain and his army virtually annihilated. (2) Military and naval commander during the first Punic War. After various successful operations by land, the Carthaginian fleet, commanded by Hamilcar and Hanno, was defeated (256 B.C.) by Regulus and Volso off Ecnomus, half-way between Gela and Agrigentum.

Hamilcar Barca (c. 270-228 B.C.). Carthaginian soldier and statesman, the father of Hannibal.



Hamilcar, Carthaginian soldier
From a coin

In command of the Carthaginian forces in Sicily during the first Punic War, he successfully held his ground against the Romans, until the naval victory of the latrity under Catulus, in 241 B.C., forced the Carthaginians to conclude a peace, in negotiating which Hamilcar took the leading part. On his return to Carthage he had to deal with a revolt of mercenaries, which he crushed after three years' fighting. He then turned his attention to Spain, and in nine years, by fighting and by negotiation, had established Carthaginian dominion over a great part of the country, when his career was brought to an end by his death in battle in 228 B.C. His surname means lightning (Hebr. *barak*).

Hamilton. Burgh and market town of Lanarkshire. It stands near where the Avon falls into the Clyde, and is 11 m. S.E. of Glasgow. It has stations on the N.B. and

Cal. Rlys. and is the centre of a rich coal and ironstone district; mining being the chief industry. There are also cotton and other manufactures, while the place is a centre for the produce of numerous market gardens.

Hamilton's chief buildings are the town hall with a lofty clock tower, and the county buildings. The grammar school was founded in 1588, and moved to its present building in 1847. There are barracks, and the place is a regimental depot. Tram-



Hamilton arms



Hamilton Palace, Lanarkshire. Formerly the seat of the dukes of Hamilton

ways connect the town with Glasgow, Motherwell, and other places in the neighbourhood. It gives its name to a county division returning one member to Parliament. Hamilton was originally known as Cadzow, but took its present name when it passed to the family of Hamilton. Its modern growth began with the opening of the mines in the 19th century. Pop. 38,600.

Hamilton Palace stands near the town. It occupies the site of the burgh of Netherton, and the first house was built about 1600. This was rebuilt about 1700, and in

1820-30 the 10th duke built the third house. An enormous building in the classical style, the front is Corinthian, with a pillared portico. The treasures of the palace were very valuable, but in 1882 a great sale disposed of a number of them for over £300,000. In 1920 the duke decided to dismantle the palace, which was becoming unsafe owing to the underground workings, and the rest of the pictures and other contents were sold. In the park, which is 1,500 acres in extent, is a magnificent mausoleum, built by the 10th duke at a cost of about £130,000. This, too, became unsafe, and in 1921 arrangements were made to remove the bodies

therefrom. Included in the ducal property are the ruins of Cadzow Castle, in the park of which is a famous breed of wild cattle.

Hamilton. Suburb of Brisbane, Australia. It has fine river frontage with wharf accommodation for the largest ocean steamships. Pop. 6,247. See Brisbane.

Hamilton. Chief town of the western district of Victoria, Australia. It is 198 m. W. of Melbourne by rly., in the centre of a pastoral and agricultural area, with butter factory and meat-preserving works. Pop. 5,000.

Hamilton. City and port of Canada. It stands on a branch of Burlington Bay, at the W. end of Lake Ontario, being 40 m. from



Hamilton, Ontario, arms



Hamilton, Canada. General view of the city on Lake Ontario

Toronto. It is served by the three transcontinental lines, C.P.R., C.N.R., and G.T.R., and has a service of electric trains to towns in the neighbourhood. From here steamers go to Toronto and other ports on the St. Lawrence and the great lakes. Behind are hills and in front is a narrow strip of land called Burlington Beach, which separates it from Burlington Bay. A canal has been cut through the beach, a popular resort in summer.

The city has Anglican and Roman Catholic cathedrals, and a large number of churches. There are many colleges and schools, hospitals, public libraries, and theatres; also parks and recreation and athletic grounds, the chief parks being Gore and Dundurn Castle. There are the county buildings of Wentworth co., and a fine market square. A service of electric trams runs through the wide streets, and there is electric light and power from the De Cew Falls. Sometimes called the Birmingham of Canada, Hamilton has manufactures of iron and steel goods, including railway stock and agricultural implements, as well as textiles, tobacco, and furniture. It is a railway centre.

The city was founded about 1778, its first inhabitants being loyalists from the U.S.A. Later it took the name of Hamilton from George Hamilton. Its growth during the early years of the 20th century to one of the largest cities in Canada was mainly due to the introduction and use of electric power. Made a municipality in 1833, it is governed by a council consisting of mayor and aldermen. Pop. 100,000.

Hamilton. Chief town and administrative centre of the Bermudas. It is situated on Great Bermuda or Main Island, with a deep harbour approached by a long, intricate channel through Two Rock Passage. There are well-laid-out gardens, and it is a winter resort for American visitors. Pop. 2,627.

Hamilton. Town of North Island, New Zealand, in Waikato co. It is 86 m. by rly. S.S.E. of Auckland, the centre of a grazing and dairying district. It was first laid out for settlement by British soldiers after the Maori wars. Pop. 5,677.

Hamilton. City of Ohio, U.S.A., the co. seat of Butler co. It stands on the Great Miami river, 25 m. N. of Cincinnati, and is served by the Cincinnati, Hamilton, and Dayton, and other rlys., and the Miami and Erie Canal. The chief buildings are the court house, a public library, and the Notre Dame Academy. The river and canal afford water-power for the industrial plants, which include woollen, flour, and

paper mills, engine and machine works, foundries, and carriage and wagon factories. Settled in 1791, Hamilton became a city in 1857. Pop. 45,647.

Hamilton. Famous Scottish family to which the dukes of Abercorn and Hamilton belong. It appears to have descended from a certain Walter Fitzgilbert, and one story is that the name is taken from a place in Leicestershire. Walter called himself of Hameldone and obtained the barony of Cadzow in Lanarkshire. His younger son was the ancestor of the earls of Haddington, one of the many titles held by the Hamiltons.

Walter's eldest son David, who held the barony of Cadzow, was taken prisoner at Neville's Cross and was a lord of parliament. From him and his son various branches of the Hamiltons descended, one of these being now represented by Lord Hamilton of Dalzell. James Hamilton, baron of



William, 3rd Duke of Hamilton.
After Mytens

Cadzow, who was made Lord Hamilton in 1445, really founded the family's greatness by his marriage with Mary, daughter of King James II. His son was made earl of Arran in 1503, and one of his illegitimate children was John Hamilton, archbishop of St. Andrews. John, 2nd earl of Arran, was the father of Claud, Lord Paisley, from whom the dukes of Abercorn are descended, and of John, made marquess of Hamilton. From the latter the dukes of Hamilton are descended, though, after the death of the 2nd duke in 1651, only in the female line. The heir male of the family is therefore the duke of Abercorn, whose eldest son is known as the marquess of Hamilton. In 1786 the earl of Abercorn was created Viscount Hamilton of Hamilton in Leicestershire.

Hamilton, Duke of. Scottish title, the oldest of its kind in the peerage. Sir James Hamilton, of Cadzow, and his wife, Mary, daughter of James II of Scotland, had a son who, in 1503, was made earl of Arran. His son, another James, known as the Regent Arran, was made duke of Châtellerauld, in France, in 1549, and John, one of the regent's younger sons, was created marquess of Hamilton in 1599.

The marquess, who died in 1604, was succeeded by his son James, who, in 1619, was made an English peer as earl of Cambridge.



1st Marquess of Hamilton
After M. Gerards

The latter's son James was the first duke, created in 1643. Executed in 1649 for his share in the civil war, he was followed by his brother William, already earl of Lanark, and secretary of state in Scotland under Charles I. He was mortally wounded at Worcester in Sept., 1651, and the title and estates passed to his niece Anne. She married William Douglas, earl of Selkirk, who, in 1660, was created duke of Hamilton. This duke, who ranks as the 3rd, turned from the Stuarts to William of Orange in 1688 and died in 1694.

The duchess survived him, but in 1698 she resigned her titles to her son James Douglas, who was created duke with precedence from 1643. He was made duke of Brandon in 1711, and was killed in a famous duel with Lord Mohun in 1712, an incident depicted in Esmond. From him the later dukes are descended. James, the 6th, married the beauty, Elizabeth Gunning (q.v.); James, the 7th, inherited, in 1761, the title of marquess of Douglas, but failed after litigation to secure the Douglas estates. However, the family was known henceforward as Douglas-Hamilton. Alexander, the 10th duke, ambassador at St. Petersburg, was a great collector of pictures and works of art generally. William, the 11th duke, married a daughter of the grand-duke of Baden, and his daughter married the prince of Monaco. William, the 12th duke, was made duke of Châtellerauld in 1864 by Napoleon III.

The semi-royal position of the dukes of Hamilton passed with the death of the 12th duke in 1895. He was succeeded by a cousin, Alfred Douglas, but left many of

his estates to his daughter, the marchioness of Graham. She inherited Brodick Castle and most of the isle of Arran. Hamilton Palace and the estates in Lanarkshire went to the new duke. The duke's eldest son is known as marquess of Douglas and Clydesdale.

Hamilton, JAMES HAMILTON, 1ST DUKE OF (1606-49). Scottish politician. The eldest son of the



James, Duke of Hamilton

After Van Dyck

2nd marquess of Hamilton, he was born June 19, 1606. For a time he was at Exeter College, Oxford, and, having become marquess in 1625, he went to the court of Charles I. He was for about three years in Germany, whither he took a force to aid Gustavus Adolphus, but he returned in time to assist Charles with his advice.

In the intrigues that preceded the Civil War, Hamilton was prominent, the king relying greatly on his counsel. In 1641 he deserted Charles, but soon he was serving him again.

When war broke out he remained in Scotland, being leader of a faction there; but his plans and intrigues failed, and, discredited, he left Edinburgh for Oxford. Charles put him in prison, but soon he was released. Then came the crowning act of his life, his leadership of a strong Scottish force to restore Charles, which led to the renewal of the civil war in 1648. Incompetent as a general, he was easily routed at Preston, and was made prisoner. Tried and found guilty, on March 9, 1649, he was executed.

Hamilton, ALEXANDER (1757-1804). American statesman. He was born Jan. 11, 1757, on the island of Nevis, West Indies, of which his mother was a native; his father was a Scotsman. Educated at King's (later Columbia) College, New York, at the age of 17

he published essays on The Rights of the Colonies. At the age of 20 he was a lieutenant-colonel and aide-de-camp to George Washington. In 1780 he married a daughter of General Schuyler, who survived him 50 years. In 1782 he was elected a member of Congress for the state of New York, in 1786 became a member of the New York Legislature, and in 1787 he was a delegate to the convention for framing the constitution of the U. S. A., with the drafting of which he is believed

to have had much to do. A year later he was a member of the New York State Convention for ratifying that constitution. In the interval, with two friends, he had produced The Federalist, explaining the constitution to the people.

From 1789-95 he was secretary to the Treasury, when he established the National Bank, and proved himself a great financier. After resigning from the Treasury he practised law in New York. In 1798 he was appointed second in command of the provisional army in anticipation of a French invasion, and on the death of Washington in the following year was in chief command. On July 11, 1804, he was wounded in a duel with Aaron Burr, and died on the following day. Washington's closest and ablest associate, Hamilton was a great and clear thinker, whose influence on the political development of his country was enormous.

Bibliography. Life, by his son, J. C. Hamilton, 1834-40; Hamilton and his Contemporaries, C. J. Riethmüller, 1864; Life and Epoch of Alexander Hamilton, G. Shea, 1879; Alexander Hamilton, H. C. Lodge, 1886; and Alexander Hamilton, F. S. Oliver, 1906. Gertrude Atherton's novel, The Conqueror, 1902, deals with Hamilton's life in graphic fashion, and the same author edited his Letters, 1903.

Hamilton, ANTHONY, COUNT (c. 1646-1720). British author and



Anthony, Count Hamilton, British soldier



After Trumbull

in Ireland, 1689-90, and was at the battle of the Boyne, after which he went abroad and spent most of his life at the court of the Stuarts in exile at Germain-on-Laye, where he died, April 21, 1720. He is chiefly remembered as writer of the lively Memoirs of the Court of Charles II, of his brother-in-law, the count of Gramont (*q.v.*).

Hamilton, SIR BRUCE MEADE (b. 1857). British soldier. Born Dec. 7, 1857, he entered the East Yorkshire regiment in 1877. A long career of active service began in Afghanistan in 1880, and in succeeding years he was in S. Africa and Burma. In 1895, as a major, he



Sir B. M. Hamilton, British soldier
Lafayette

was in Ashanti, and in 1897 in Benin, where he commanded the Niger Coast Protectorate Force. During the S. African War he served first on the staff and afterwards in command of the 21st brigade, and of a flying column. In 1903 he was put in charge of a brigade at Aldershot; a divisional command followed, and from 1909-13 he commanded the Scottish district. During the Great War Hamilton was in command of an army raised for home defence in 1914-15, and in 1915-16 was in charge of the training centre at Ripon. In 1902 he was knighted, and in 1913 made a full general.

Hamilton, CICELY (b. 1872). British author, playwright, and actress. Born in London, her fame as a playwright rests chiefly on Diana of Dobson's, 1906. Her other publications include three novels based on her plays: Diana of Dobson's; Just to Get Married; and A Matter of Money, 1916; a study of Marriage as a Trade; and William, an Englishman, 1919. She also wrote and lectured largely on feminist subjects.



Cicely Hamilton, British author
Elliott & Fry

Hamilton, LORD CLAUD JOHN (1843-1925). British politician and railway director. Born Feb. 20, 1843, a son of the 1st duke of Abercorn, from Harrow he joined the Grenadier Guards, but after three years entered Parliament as M.P. for Londonderry city. In 1868 he served as a lord of the

treasury in the Conservative ministry. From 1869-80 he was M.P. for King's Lynn; from 1880-88



Lord Claud Hamilton,
British politician

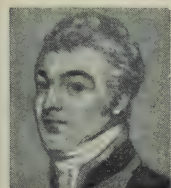
Russell

chairman. He was one of the best known figures in the railway world, and a keen defender of the interests of capital. In 1917 he was made a P.C. He died Jan. 26, 1925.

Hamilton, Cosmo. British dramatist and novelist. The second son of Henry Gibbs and brother of Sir Philip Gibbs (*q.v.*), he assumed his mother's name in 1898. He edited *The World*, 1905-6, and wrote a number of capital novels and plays. When the Great War broke out he joined the Royal Naval Air Service, being gazetted

a lieutenant in Nov., 1914. His many novels and short stories included *Adam's Clay*, 1907; *Keepers of the House*, 1908; *The Blindness of Virtue*, 1908; *The Princess of New York*, 1911; *The Outpost of Eternity*, 1912; *The Miracle of Love*, 1915. Among his plays were *The Wisdom of Folly*, 1902; *The Mountain Climber*, 1905; *Arsène Lupin*, 1909; and *Mrs. Skeffington*, 1910.

Hamilton, Sir Edward (1772-1851). British sailor. Born March 12, 1772, when a boy he served for two years with his father, Sir John Hamilton, in the *W. Indies*. Promoted lieutenant in 1793, he was present at the siege of Bastia, 1794, and in 1796 was sent again to the West



Sir Edward Hamilton,
British admiral

After Thompson

Indies. In 1799 he led a party in boats into the harbour of Puerto Cabello and, under heavy fire, seized the Spanish frigate *Hermione*, and towed her out. Only 12 of his men

were wounded, but Hamilton himself was badly hit. This unrivalled feat won him a knighthood and the

naval gold medal. While returning to England he was captured by a French privateer and taken to Paris, where Napoleon is said to have questioned him about his exploit. In 1818 he was created a baronet and became an admiral in 1846. He died in London, March 21, 1851.

Hamilton, Elizabeth (1758-1816). Scottish writer. Born in Belfast, July 21, 1758, and brought

up in Scotland, she wrote on educational, religious, and philanthropic subjects; but her fame rests chiefly on *The Cottagers of Glenburnie*, a story of Scottish rural life. Mrs. Hamilton, as she called herself, died at Harrogate, July 23, 1816.

Hamilton, Emma, Lady (c. 1761-1815). British adventuress. A daughter of Henry Lyon, she is

believed to have been born at Ness, in Cheshire, probably in 1761, though April 26, 1763, is sometimes given as the date. Her parents were in humble circumstances, and her father having died while she was a baby, she was brought up by her grandmother at Hawarden. She came to London about 1778 as a nursemaid, and there are many con-

flicting stories as to her early life and intrigues. In 1782 she became the mistress of the Hon. Charles Greville, and four years later of his uncle, Sir William Hamilton, British ambassador at Naples. In 1791 Sir William married her at Marylebone, and returned with her to Naples, where she became the confidante of the queen. In 1793 she and Nelson first met, but it was five years later, after his victory at the Nile, that they became intimate. Their child, Horatia, was born in 1801, after the return of the Hamiltons and Nelson to England. Hamilton died in 1803, and Nelson in 1805. Lady Hamilton was left with comfort-

able means, soon swallowed up by her extravagance.

After being imprisoned for debt, she went to Calais in 1813, and died there Jan. 15, 1815. She made extravagant claims to public reward on account of doubtful services rendered to the state, and is remembered mainly for her *liaison* with Nelson and for her remarkable beauty, to which over twenty portraits of her by George Romney bear witness. See *Memoirs of Lady Hamilton*, 1815 (and later editions); *Lady Hamilton and Nelson*, J. C. Jeaffreson, 1888; *Emma, Lady Hamilton*, H. Gamlin, 1891; *Emma, Lady Hamilton*, Walter Sichel, 1905.

Hamilton, Lord George Francis (b. 1845). British politician. A younger son of the 1st duke of Abercorn, he was educated at Harrow. In 1868 he was sent to the House of Commons by the co. of Middlesex, and after the redistribution of 1885 represented the Ealing division until his retirement. In 1874 he entered the Conservative ministry as under-secretary for India, and in 1878 was



Elizabeth Hamilton
After Raeburn



From a portrait of Lady Hamilton as a Bacchante, by Sir Joshua Reynolds

Emma Hamilton

transferred to the office of vice-president of the council. In 1885-86, and again from 1886-92, he was in the cabinet as first lord of the admiralty, and from 1895-1903 was secretary for India.

In 1903 he resigned owing to disagreement with Chamberlain's fiscal proposals, and retired from Parliament in 1906. In 1894 he was chairman of the London County Council, and after his retirement

was chairman of the commission that inquired into the poor laws, and of the one that reported upon the early failure in Mesopotamia during the Great War. In 1916 Lord George published his reminiscences.



George Hamilton

Elliott & Fry

Hamilton, HUBERT ION WETHERALL (1861–1914). British soldier. Born June 27, 1861, he was a son of Lieut.-General H. M. Hamilton and a brother of General Bruce M. Hamilton. He joined the Queen's Regiment in 1880, of which he was adjutant, 1886–90; served in the



H. I. W. Hamilton,
British soldier
Elliott & Fry

Burmese expedition, 1886–88; the Egyptian campaign, 1897–99; and in S. Africa, 1899–1902. Military secretary to Kitchener in S. Africa, 1900–2, and in India, 1902–5, he commanded the 7th brigade, 1906–8, and was on the general staff of the Mediterranean command, 1908–9. He led the 3rd division at the outbreak of the Great War, distinguishing himself at Mons and the Aisne. Hamilton, who was given the D.S.O. in 1898, was killed near La Bassée, Oct. 14, 1914.

Hamilton, SIR IAN STANDISH MONTEITH HAMILTON (b. 1853). British soldier. The son of a soldier, he was born at Corfu, Jan. 16, 1853. Educated at Cheam School and Wellington College, he entered the Gordon Highlanders in 1873, and first saw active service in the Afghan War of 1878–79. He served in the Boer War of 1881, being taken prisoner at Majuba Hill, where he was wounded, was with the expedition up the Nile in 1884–85, and in Burma, 1886–87. In 1891 he became colonel, and, after service in the Chitral campaign, 1895, led a brigade in the Tirah, 1897–98. For a short time he commanded the school of musketry at Hythe.

In 1899, when the S. African War began, Hamilton was in Ladysmith as chief of the staff to Sir G. White, and he was in command of the infantry at Elandslaagte and other engagements. After the relief of Ladysmith he commanded some mounted infantry, was chief of the staff to Lord Kitchener, and was in command of mobile columns

in the Transvaal until the end of the war in 1902, when he was made quartermaster-general to the forces.

During the Russo-Japanese War he was military representative of India, being in Manchuria with the Japanese, an experience which led to his book, *A Staff Officer's Scrap Book*. From 1905–9 he was general officer commanding the southern district, from 1909–10 adjutant-general and a member of the army council, and from 1910–15 commander-in-chief in the Mediterranean and inspector-general of overseas forces. In 1915, having been just made a full general, Hamilton was chosen to command the force that landed on the Gallipoli peninsula. He led it in its terrible fighting until he was superseded in Oct.

The failure of the expedition was bound to react on the general in charge of the operations, and the commission that inquired into the matter censured him, although



Ian Hamilton
Russell

only on minor points. His sanguine temperament, perhaps, made him unfitted for the task, but it is doubtful whether another would have succeeded. He retired from the army in 1920. A charming personality, Hamilton is a writer with distinct gifts of style, shown not least in his dispatches, and something of a poet. His works include *Icarus and Fighting of the Future*, while *A Gallipoli Diary, 1920*, deals with the campaign in Gallipoli. See Gallipoli, Campaign in.

Hamilton, JOHN MCLURE (b. 1853). American painter. Born at Philadelphia, Jan. 31, 1853, he studied at the Antwerp Academy and at the Beaux Arts, Paris. The first years of his professional life were passed in his native town, but in 1878 he settled in London as a portrait painter. Portraits of

George V, Gladstone, Cardinal Manning, Prof. Tyndall, General Booth, Lord Leighton, and other prominent artists may be cited.

Hamilton, PATRICK (c. 1504–28). Proto-martyr of the Scottish Reformation. Born at Stane House, Lanarkshire, or Kincavel, Linlithgowshire, grandson of the 1st Baron Hamilton, his mother was a daughter of Alexander Stewart, duke of Albany, second son of James II. Made abbot of Ferne, Ross-shire, in his 14th year, he was educated at Paris, Louvain, and St. Andrews.

For commending Tyndale's translation of the N.T. in 1526 he was charged with heresy. He escaped to Marburg, where he came under the influence of Luther and other reformers and composed his *Locci Communes*, known as Patrick's Pleas, in which he set forth the doctrine of justification by faith. He returned to Scotland in the autumn of 1527, was seized Feb. 28, 1528, tried for heresy in St. Andrews Cathedral, sentenced by Archbishop Beaton, and burnt at the stake, Feb. 29, 1528. See Life, P. Lorimer, 1857; Patrick Hamilton, a Tragedy of the Reformation, T. P. Johnston, 1882.

Hamilton, WALTER KER (1808–69). British prelate. Born Nov. 16, 1808, son of Anthony Hamilton, archdeacon of Taunton, he was educated at Eton and Christ Church, Oxford, and was fellow of Merton, 1831, with Henry E. Manning and Edward Denison. An adherent of the



Walter K. Hamilton,
British prelate
After Richmond

Oxford movement (q.v.), he succeeded Denison as vicar of S. Peter-in-the-East, Oxford, 1837–41; was canon residentiary, Salisbury, 1841–54; and bishop of Salisbury, 1854–69. In his charges he maintained the doctrines of the Eucharistic Sacrifice, the Real Presence, and sacramental confession. He instituted diocesan retreats, established Salisbury Theological College, 1860; composed Morning and Evening Services for Every Day in the Week, 1842; and wrote on Cathedral Reform, 1853. He died Aug. 1, 1869.

Hamilton, WILLIAM (1665–1751). Scottish poet. A friend of Allan Ramsay, his Seven Familiar Epistles represent a correspondence in verse between the two poets. Hamilton is also remembered by his elegy on his dog Bonny Heck and by "Willie was a Wanton Wag." He wrote a

modernised version of Blind Harry's Wallace, which attained considerable popularity. Generally known as Hamilton of Gilbertfield, in Lanarkshire, where he long resided, he afterwards moved to Latrick, and died there May 24, 1751.

Hamilton, WILLIAM (1704-54). Scottish poet, generally known as William of Bangour, in Linlithgowshire. He became involved in the Jacobite rebellion of 1745, and had to flee the country. He eventually returned and succeeded to the family estate, but his health made it necessary for him to go abroad again, and he died at Lyons, March 25, 1754. He was a contributor to Allan Ramsay's *Tea-table Miscellany*. His fame rests chiefly on the beautiful poem, *The Bonnie Braes of Yarrow*.

Hamilton, SIR WILLIAM (1730-1803). British diplomatist. Born Dec. 13, 1730, he was a grandson of the third duke of Hamilton, and in early life was a soldier. In 1761 he became an M.P. and in 1764 went to Naples as British minister. There he remained until 1800, varying his easy diplomatic duties with much social and sporting life and a keen study of volcanic activity, encouraged by his proximity to Vesuvius.

He made a valuable collection of antiquities, part of which, bought by the trustees of the British Museum in 1772, formed the nucleus of the department of Greek and Roman antiquities. Ancient vases especially were purchased by him in large numbers; he was an F.R.S. and wrote several books on volcanoes. His first wife, a Welsh heiress, having died in 1782, Hamilton persuaded Emma Lyon to live with him at Naples, and she remained his mistress until the two were married in 1791. About 1793 the pair made the friendship of Nelson, and the three spent a good deal of time together. Hamilton appears to have acquiesced in his wife's intimacy with the great seaman, who was present when he died, April 6, 1803.

Hamilton, SIR WILLIAM (1788-1856). Scottish philosopher. Born at Glasgow, March 8, 1788,



Sir Wm. Hamilton,
Scottish philosopher
After J. Archer, R.S.A.

and educated there and at Balliol College, Oxford, he became professor of history at Edinburgh in 1821, and professor of logic and metaphysics from 1836-56. He was an ardent supporter of university reform and an opponent of the tendency of the colleges to claim for themselves teaching and other functions which rightly belonged to the university. Hamilton, much influenced by Kant, gave a new turn to Scottish philosophy. He especially insists upon the relativity of knowledge; the absolute is not only unknowable, but also inconceivable; it is an object of faith, not of science. His most important work is his *Lectures on Metaphysics and Logic*, ed. Mansel and Veitch, publ. posthumously 1859-61. He died at Edinburgh, May 6, 1856.

Hamilton, WILLIAM GERARD (1729-96). English politician. Born in London, Jan. 28, 1729, the son of a bench of Lincoln's Inn, and originally intended for the law, he gave it up for politics. Having entered Parliament in 1754, his maiden speech in 1755, which

Walpole declared never to have been surpassed by anyone except Pitt, earned him the title of "Single-speech Hamilton." The sobriquet is not quite accurate, as he afterwards spoke with success in both the English and Irish parliaments. After serving as chief secretary to the lord-lieutenant of Ireland, Hamilton entered the Irish Parliament and from 1763-84 was chancellor of the exchequer in that country. He died July 16, 1796.

Hamilton, SIR WILLIAM ROWAN (1805-65). Irish mathematician. Born at Dublin, Aug. 4, 1805, as a boy he showed a remarkable aptitude for languages, reading Latin and Greek, Persian, Arabic, and nine other languages before the age of thirteen. Intended by his father for a post in the East India Company, his great genius for mathematics asserted itself, and before his seventeenth birthday he had detected a mistake in Laplace's *Mécanique Céleste*. Sent to Trinity College, Dublin, his brilliance soon attracted attention.

At the early age of 22 he was appointed professor of astronomy to the university. In 1835 he was knighted.

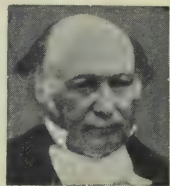
During these years optics owed him a great debt for his remarkable theoretical researches, the chief of which resulted in his prediction of the phenomenon of conical refraction, leading to a remarkable proof of the undulatory theory of light.

The work by which Hamilton was to become best known was a system of mathematical analysis known as Quaternions (*q.v.*). The method was published in his *Lectures on Quaternions*, 1853, and *The Elements of Quaternions*, 1866. He died Sept. 2, 1865. Consult *Life*, Rev. R. P. Graves, 1883-89.

Hamilton-Gordon, SIR ALEXANDER (b. 1859). British soldier. Born July 6, 1859, he was a grandson of the 4th earl of Aberdeen. Educated at Winchester, he entered the Royal Artillery in 1880, and almost at once saw service in Afghanistan. During the S. African War he was appointed to the intelligence department. From 1904-10 he was on the general staff at headquarters. From 1910-14 he was director of military operations in India, and in Aug., 1914, he was made commander-in-chief at Aldershot, retaining that position until May, 1916, when he led a division to France. A little later he was put in command of the 9th (2nd Army) Corps, which he led in the fighting on the Lys, early in 1918, and afterwards took to assist the French on the Aisne. In 1918 he was knighted and made a lieutenant-general.

Hamilton Group. Series of stratified rocks of marine origin, found in N. America (New York State, Pennsylvania, Ontario, etc.). They form the upper division of Middle Devonian system in that region, and contain abundant fossils (trilobites, brachiopods, etc.). These rocks reach a thickness of 1,500 ft., and are extensively used for building and paving purposes.

Hamirpur. District, subdivision and town of India, in the United Provinces. The surface is flat and fertile, and is watered by the Jumna, which flows along the N. boundary, and other streams. The town is the capital of the district, and stands on the Jumna, 150 m. S.E. of Agra. Area, district, 2,292 sq. m.; subdivision, 375 sq. m. Pop., district, 465,223; subdivision, 79,506; town, 7,452.



Sir W. R. Hamilton,
Irish mathematician



Sir Wm. Hamilton,
British diplomatist
From an engraving



Wm. G. Hamilton,
English politician



Hamlet. The play scene, where Hamlet, lying at Ophelia's feet, watches the effect of the play upon the conscience of his uncle Claudius. From the painting by Maclise

Tate Gallery, London

Hamitic. Term denoting an ethnic and linguistic group in N.E. Africa. So called from Ham, one of the sons of Noah, in ethnology it designates a frizzy-haired, medium-headed, red-brown, thin-lipped type, of nomadic culture, best represented by the Nubian Beja, Abyssinian Agaos, and the Danakil, Galla, and Somali tribes. Their relationship to the ancient Egyptians is still undecided. An early Himyarite-negroid blend rather than a distinct race, their contact with peoples of lower culture produced three great ethnic fusions: with Bushmen, the Hottentot; with lake negroes, the Bantu; with Nilotic negroes, the Masai. Hamitic speech may be related to Semitic through a common precursor in W. Asia. It is classified into 47 stocks, comprising 71 dialects, spoken over one-fifth of Africa.

Hamlet. Tragedy by Shakespeare. Hamlet, Prince of Denmark, learning from his father's ghost that the father was poisoned by Claudius, his brother and successor, has a play acted before Claudius, in which a similar case of poisoning is represented. Claudius rises in excitement and betrays his guilt. Hamlet rebukes his mother for her unnatural union with Claudius, and sails for England with the courtiers Rosencrantz and Guildenstern. Having altered the letter they carried from Claudius for delivery to the English king, Hamlet sends them to the destruction intended for himself, and returns to Denmark. Laertes, to avenge the death of his father,

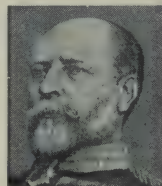
Polonius, whom Hamlet had killed, and that of his sister Ophelia, who, losing her reason, had drowned herself, stabs Hamlet with a poisoned foil, but not before he himself had been fatally wounded with the same weapon. Hamlet kills the king, and the queen dies from drinking of a poisoned cup intended for Hamlet.

The scene is laid in Elsinore, and relief from the main theme is supplied by the sentimentousness of Polonius, the king's counsellor, and the witticisms of the two gravediggers who bury Ophelia. Its stock of varying and exciting incidents, its store of pregnant utterances and maxims, its fairly equal division into scenes of tragedy and comedy, above all, the appeal of its leading character, have made Hamlet the most popular of all Shakespeare's plays. Henry Irving (Lyceum, Oct. 31, 1874) and Forbes-Robertson (Lyceum, Sept. 11, 1897) have been the most famous of modern Hamlets. But nearly all the more prominent English-speaking players of recent times, Edwin Booth, Wilson Barrett, Frank Benson, Beerbohm Tree, H. B. Irving, Martin Harvey, and Matheson Lang, have assumed the rôle, as have such celebrated foreigners as Salvini, Rossi, Mounet-Sully, and Sarah Bernhardt.

Hamlet is based on an ancient Icelandic saga of the Danish kings, which found its way, in 1570, from the *Historia Danica* of Saxo Grammaticus, 1514, into Belleforest's *Histoires Tragiques*. There existed a previous play in English on the subject, probably by

Kyd. Shakespeare's play was first acted at The Globe, 1602, with Burbage in the title-rôle, and there is a tradition that the poet took the part of the Ghost. It was first published in 1603. There were four other quartos between 1604 and 1611. The existing text is collated from the Second Quarto of 1604 and the 1623 folio. The play is in five acts, contains 3,924 lines, of which 1,208 are prose and 2,490 blank verse, with 81 pentametric rhymes, and has found more commentators than any other of Shakespeare's plays. See Barrett, Wilson; Forbes-Robertson; consult also Shakespeare's Hamlet; a New Commentary, W. F. Trench, 1913; Hamlet and the Scottish Succession, L. Winstanley, 1921.

Hamley, Sir Edward Bruce (1824-93). British soldier. Born at Bodmin, April 27, 1824, and

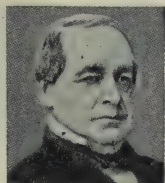


Sir E. B. Hamley, British soldier

educated at the Royal Military Academy, Woolwich, he entered the artillery in 1843, and first saw active service in the Crimean War. In 1859 he was appointed professor of military history at the Staff College at Sandhurst, and his lectures formed the basis of his great work *The Operations of War*, 1866. From 1870-77 he was commandant of the Staff College. In 1882 he served in the Egyptian War.

Mortified at what he considered the lack of recognition of the part he played at the battle of Tel-el-Kebir, he issued a special report on the operations, supplemented by a magazine article. Public sympathy was on his side, and he was made a K.C.B., but no further official employment was given him. He sat in Parliament as a Conservative from 1886-92. Hamley's writings include *The War in the Crimea*, 1855, and contributions to *Blackwood's* and *Fraser's Magazines*. He died in London, Aug. 12, 1893.

Hamlin, HANNIBAL (1809-91). American statesman. Born at Paris Hill, Maine, Aug. 27, 1809, he practised for some years as a lawyer. From 1835-40 he was connected with the legislature of his state, of which he was governor in 1857. Member of Congress,



Hannibal Hamlin, American statesman

1843-47, he took up a strong anti-slavery attitude, and introduced the Wilmot Proviso prohibiting slavery in Mexican territory. He was a senator, 1848-61 and 1869-81, and in 1854 left the Democrats owing to their attitude towards slavery, and joined the new Republican party, with the foundation of which he had much to do. He was vice-president of the U.S.A., 1861-65, and minister to Spain, 1881-83. He died at Bangor, Maine, July 4, 1891. See *Life*, C. E. Hamlin, 1899.

Hamm. Town of Germany. It stands on the Lippe, 19 m. from Dortmund, in the Prussian prov. of Westphalia. Standing on the Westphalian coalfield, it is an industrial centre, with manufactures of machinery, iron, and varieties of iron goods, also gloves, leather, and chemicals. There are several churches, one dating from the 13th and another from the 16th century. The town has a service of electric tramways. A mile away are some thermal baths visited by invalids and others. Hamm belonged in the Middle Ages to the Hanseatic League. In 1666 it passed, with the county of Mark, of which it was the capital, to Brandenburg, and thus to Prussia. It was then a fortified town which had undergone several sieges, while in the Seven Years' War it was attacked by the French. Pop. 43,700.

Hammamet. Gulf and town of Tunisia, on the N.E. coast. The town is situated on the gulf, 40 m. by rly. S.E. of Tunis, and is a popular bathing resort. Pop. 3,200.

Hammann, Otto (b. 1852). German publicity agent. Born at Blankenhain, Weimar, Jan. 23, 1852, and educated at Leipzig, Heidelberg, and Jena, he served as an officer in the German army and then took up journalism. Introduced to the German Foreign Office by Caprivi, he became its Press director, and wielded much power in the interests of the war-party. In 1917 he assumed control of the Transocean News Agency for pro-German propaganda in foreign countries.

Hamme. Town of Belgium. In the prov. of E. Flanders, it stands on the Durme, 13 m. E. of Ghent. It has textile manufactures, including lace and linen, while other industries are flour mills and oil mills. Pop. 14,200.

Hammer. Tool, consisting of a heavy head of metal usually fixed on a shaft of wood, and used for striking blows. Hammers vary in size from small hand hammers, weighing only a few ounces, to giant power hammers weighing many tons. In hand hammers the shaft is usually of ash or hickory. The striking part of the iron or steel head is called the face, the opposite end the peen. The latter is often split and curved to enable nails to be withdrawn.

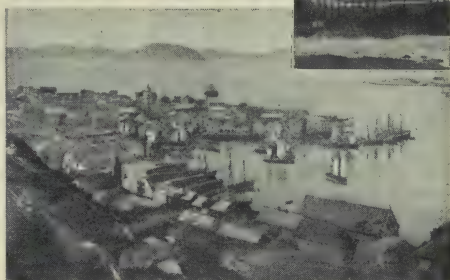
In many hammers, e.g. a coal-breaking hammer, there are two faces which may be used indifferently. In masonry a mash hammer has a short handle and heavy head for use with chisels; a scabbling hammer has one end pointed for use on hard stone; and the patent hammer is one used for granite and other hard rocks, the head consisting of a number of plates with sharpened edges bolted together.

The word hammer is widely used for any part of a mechanism which strikes, as the hammer of a gun, the hammers in the action of a pianoforte, etc., as well as for objects that are hammer shaped. See *Steam Hammer*.

Hammer, THROWING THE. Branch of field athletics. It is of very ancient date and probably of Celtic origin, as it has been for centuries a favourite pastime in Scotland and Ireland. Under the term casting the bar, it was a popular feature of rural sports in England, being a form of amuse-

ment indulged in by Henry VIII. The conditions governing modern hammer throwing require the performer to throw from inside a circle of 7 ft. in diameter, within which he must remain after having hurled the hammer. The hammer must weigh 16 lb. and not exceed 4 ft. in length. The head and handle may be of any shape, size or material. Under these conditions J. J. Flanagan made a throw of 170 ft. 4½ ins. at the London Stadium on July 17, 1908. The American hammer consists of a steel wire handle with two loops for the hands, joined to the head by a ball-bearing swivel.

Hammerfest. Town of Norway, in the fylke or county of Finnmark. The most northerly town in the world, it stands on the W. coast of Kvalø island, which lies off the N.W. Norwegian shores in lat. 70° 40' N., 675 m. by sea N.E. of Trondhjem. Timber-built, the town



Hammerfest, Norway. General view of the town and harbour. Top, right, the Meridian Column on Bird's Cape, marking the end of the meridian as accurately measured, 1816-52

suffered severely from a conflagration, July 21, 1890, after which the town hall, churches, and schools were all rebuilt. There is a good harbour, which is the base of the Spitsbergen and Kara Sea whale fisheries. Cod-liver oil, train oil, salt fish, reindeer hides, fox skins, and eiderdown are exported, and a large trade is carried on with Archangel. Here the sun does not set from May 13 to July 29, and does not rise from Nov. 18 to Jan. 23. Pop. 2,709.

Hammer-headed Shark (*Zygaena*). Name given to a genus of fishes belonging to the shark family, but differing much in appearance from the true sharks. They include five species, and have the sides of the head expanded so as to resemble a hammer when



Hammer-headed shark. Specimen of *Zygaena sphyryna*

viewed from above. The eyes are at the extremities of these lateral head processes. These fish are common in the tropic seas, and one species (*Z. muleus*) is occasionally found off the British coasts. They frequently attain a length of 14 ft., and are voracious and dangerous. See Shark.

Hammerkop, HAMMERHEAD OR UMBRETTE (*Scopus umbretta*). African bird, related to the herons and storks. It is about 2 ft. long and has brown plumage. When the crest of feathers at the back of the head is raised, it gives the head a certain resemblance to a hammer. The bird is always found near water, and feeds chiefly on fish, frogs, and lizards.

Drinkwater's Abraham Lincoln, 1919, and Gay's The Beggar's Opera, 1920. The King's Theatre was opened on Dec. 26, 1902. In Blythe Road is the Post Office Savings Bank, 1903, and at Addison



Hammerkop. Specimen of the African bird

Hammersmith. Parl. and mun. borough of the co. of London. It is bounded S. by Fulham and the Thames, where it is fringed by the Upper Mall and Lower Mall; W. by Chiswick and Acton; E. by Kensington; and N. by Kensal Green. It is on the main road from London to

Brentford, and is served by the G.W., West London Extension, District, Piccadilly Tube, and North London Rlys. Once a parish of Fulham, it was constituted a separate borough in 1899 and covers an area of about 3½ sq. m. It possesses a fine town hall, 1897, a public library, and many churches, almshouses, and schools, the last named including S. Paul's, removed here from the city in 1883, the Godolphin School, dating from the 16th century, and those of the Latymer foundation, 1824.

The parish church of S. Paul, consecrated by Laud in 1631, and rebuilt 1882-83, contains a number of monuments, preserved from the demolition of the old building. A suspension bridge erected across the Thames in 1827, the first of

its kind near London, was replaced by the existing structure in 1887. Close by is Hammersmith Pier, 7 m. by river from Westminster. The Lyric Theatre was opened April 20, 1891; under the direction of Nigel Playfair it has seen the production or revival of several noteworthy plays, notably John

at the W. end of King Street, was acquired by the London County Council in 1887. Brook Green, 4½ acres, was made public in 1881. The Broadway is a busy rly., tram, and 'bus centre, where six roads meet. The omnibus garage, near the parish church, includes the façade of Bradmore House, pulled down in 1913, once the residence of Elijah Impey, and occupying the site of Butterwick Manor House, Cromwell's headquarters in 1647.

Once noted for its market gardens, orchards, and dairy farms, Hammersmith, which derives its name from two Saxon words meaning a town with a harbour or creek, is now covered with small houses, iron and dye works, electric lamp, sugar, and other factories. Its notable residents have included Sir Nicholas Crispe, who built Brandenburg House, once the headquarters of Fairtax, and the home of Queen Caroline, wife of George IV; Kneller; Radeliffe; Morland; Thomson; Turner; and Morris, who here started the Kelm-scott Press (*q.v.*). Two members are returned to Parliament. The chapel of S. George at S. Peter's Church was dedicated in 1920 in memory of 137 men of the parish who fell in the Great War. Pop. of bor. (1921) 130,287.

Hammerstein, OSCAR (1847-1919). American opera impresario. Born in Berlin, he went to the

Road is Olympia, a glass-roofed building, 1886, intended for agricultural shows, since used for exhibitions, and during the Great War as a camp for interned aliens and a depot of the Royal Army Service Corps. At Shepherd's Bush are a common, 8 acres, opened 1871, and the White City, 1908, notable for the Olympic Games held in its stadium, and the Franco-British and other exhibitions. At Wormwood Scrubs is a prison, 1874, and here also are two recreation grounds, 215 acres and 22 acres respectively, opened 1879 and 1886. Ravenscourt Park, 32½ acres,



Hammersmith. Hammersmith suspension bridge, erected 1887; above, the Town Hall, built 1897

U.S.A., where he made a fortune as a cigar maker. Turning his attention to opera, he built the Manhattan Opera House in New York, and from 1906 gave an excellent series of performances there. He built six other theatres in the city, also a house in



Oscar Hammerstein,
American impresario

Philadelphia, and in 1911 the London Opera House. After the failure of the latter he returned to the U.S.A., and died in New York, Aug. 1, 1919.

Hammer Toe. Condition in which the first phalanx of the toe is bent upwards, and the second phalanx downwards, the third or terminal phalanx being bent either downwards or upwards. The result is that the base of the toe presses upwards against the top of the boot, and the person walks on the extremity of the toe or even on the nail, the shape of the toe thus coming to resemble somewhat the head of a hammer. An operation involving removal of part of the toe is usually required.

Hammerton, JOHN ALEXANDER (b. 1871). British editor and writer. Born at Alexandria in the parish of Bonhill, Dumbartonshire, of Anglo-Scottish parentage, he took to journalism in Glasgow, 1888, and edited newspapers at Blackpool, Nottingham, and Birmingham before settling in London as a writer and editor of books and periodicals, 1900. His name is associated as editor with many noteworthy publishing enterprises, such as *The Punch Library of Humour*, 1907; *Harmsworth History of the World*, 1909; *The Great War*, in thirteen volumes, 1914-19; *Harmsworth's New Atlas of the World*, 1920, and *Harmsworth's Universal Encyclopedia*. He spent nearly two years, 1912-13, in Spanish America as managing editor of *El Diccionario Enciclopédico Hispano-Americano*, and his impressions of the Argentine and Uruguay are given in *The Argentine Through English Eyes*, 1917. Among his many writings in literary criticism and biography *Stevensoniana*, 1903, and *George Meredith in Anecdote and Criticism*, 1909, may be mentioned.

Hammock (Span. *hamaca*). Swinging bed of netting, canvas, fibre, skins, etc., suspended at

each end to supports. On ship-board, and particularly on warships, the hammocks are made of canvas, and in the old days of sailing vessels they were folded and stowed along the bulwarks to give some protection from the enemy's fire. The word is thought to have been derived from the fact that the natives of Brazil used the bark of the Hamack tree for nets in which to sleep.

Hammond. City of Indiana, U.S.A., in Lake co. It stands on the Grand Calumet river, 21 m. S.S.E. of Chicago, and is served by the Erie and several other rlys. The industries include slaughtering, packing, and canning, printing, and the manufacture of chemicals, bricks, starch, iron and steel, machinery, and carriages. Hammond was settled in 1869, and incorporated in 1883. Pop. 26,000.

Hammond, JOHN HAYS (b. 1855). Mining engineer. Born at San Francisco, March 31, 1855,

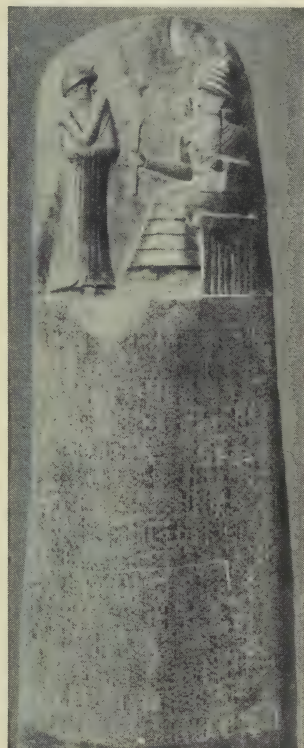


J. Hays Hammond,
Mining engineer

he was educated at Sheffield Scientific School, Yale, and in 1880 was appointed to the U.S. geological survey of the Californian gold fields. One of the leaders of the reform movement in the Transvaal, he disapproved of the Jameson Raid, but after its failure was nevertheless sentenced to death. This sentence was commuted to 15 years' imprisonment and later to a fine. Retiring to England and thence to America, he interested himself in mining and development schemes. He attended the coronation of George V as representative of the president of the U.S.A.

Hammurabi, KHAMMURABI OR HAMMURABI. King of Babylon about 2100 B.C. Identifiable with Amraphel, king of Shinar (Gen. 14), a British Museum stèle portrays him as a bearded Semite. Sixth and greatest monarch of the first dynasty of Babylon, he established its supremacy over the city states of Sumer and Akkad, besides subduing Elam. He reigned for 43 years, and engaged in building and irrigation works. His letters illuminate the political and economic conditions of his age. See *Babylonia*.

Hammurabi Code. Body of laws codified by Hammurabi, king of Babylon. It was inscribed upon a black diorite stèle for the temple of the sun-god Shamash at Sippara, and carried thence by Shulruk-Nakhkhunte of Elam, about 1200 B.C., to Susa. J. de Morgan found it there in three fragments, 1901-2, and it is now in Paris. The block, 7 ft. 3 ins. high, tapering from 6 ft.



Hammurabi Code. Stone inscribed with the code, now in the Louvre, Paris

2 ins. to 5 ft. 4 ins. round, is surmounted by a sculptured relief representing Shamash delivering the code to Hammurabi. Incised on front and back were about 8,000 words in Semitic cuneiform.

A portion chiselled out by its Elamite captor is partly recoverable from fragmentary copies previously found in Ashurbanipal's Nineveh library, whence the code was known before its authentic original came to light.

The 282 extant sections comprise enactments pertaining to witchcraft, false judgement, licensing laws, assault, desertion: marriage, divorce, dowry, inheritance, adoption; contracts, debts; tenancy, distraint, agricultural rent; rights of orphans and widows; regulation of boat-building, river-traffic, and



Hammock of the type used in the British navy

riparian rights; wages, interest, and insurance. Three grades of society were recognized, nobles, commoners, and slaves. Mutilation and fine prevailed, imprisonment is unmentioned; the absence of a murder-penalty points to the retention of the blood-feud.

The code was a unification of Semitic elements pertaining to pastoral life, violence, and theft, with the commercial and agricultural law of the Sumerian city-states, whereof glimpses appear in the legal reforms of Urukagina, king of Lagash, about 2825 B.C. For an Assyrian code somewhat similar to the Babylonian Code of Hammurabi, though smaller, see Mesopotamia. See also Babylonia.

Hampden, Sir Henry Bourverie William Brand, 1st Viscount (1814-92). Speaker of the



1st Visct. Hampden,
British politician

of the British House of Commons. Born Dec. 24, 1814, and educated at Eton, he entered Parliament as Liberal M.P., 1852, representing Lewes till 1868, and Cambridge-shire, 1868-84. For many years a party whip, he was elected Speaker in 1872, and filled that office during the years of the Parnellite obstruction. The sitting of Jan. 31, 1881, lasted for 41 hours, and at 9 a.m., Feb. 2, Brand, on his own responsibility, closed the debate. On retirement from the chair in 1884, Brand was created Viscount Hampden. He died at Pau, March 14, 1892.

Hampden, John (1594-1643). English statesman. The eldest son of William Hampden, of Hampden, Bucks, and his wife Elizabeth, an aunt of Oliver Cromwell, he was probably born in London. Educated at Thame Grammar School and Magdalen College, Oxford, in 1613 he entered the Inner Temple. He inherited his father's estates, including the residence at Great Hampden, and became member of Parliament for Grampound, Cornwall, in 1621; later he sat for Wendover, and for Buckinghamshire.



John Hampden,
English statesman

In 1627 Hampden was imprisoned for refusing to pay a share of a forced loan raised by Charles I, and in 1635, on the attempt to raise ship-money from inland

places, he refused again and was prosecuted; a majority of the judges decided against him, but the Long Parliament reversed their judgement. His courageous stand on a matter of principle established him as a popular figure, and he became one of the leaders of the parliamentary party. He took part in the impeachment of Strafford, 1641, and in 1642 was one of the Five Members whose attempted arrest by the king led to the outbreak of the Civil War. When the war began Hampden raised a regiment of infantry, and took part in the relief of Coventry and the siege of Reading. In a skirmish at Chalgrove Field, Oxfordshire, June 18, 1643, he was badly wounded, and he died at Thame, June 24. Friend and foe united in regarding him as a man of uncommon gifts. See Memorials of Hampden, Lord Nugent, new ed. 1889; Statesmen of the Commonwealth, J. Forster, 1840; Critical and Historical Essays, Lord Macaulay, 1843.

Hampden, Renn Dickson (1793-1868). British prelate. Born at Barbados, March 29, 1793, son of



Renn D. Hampden,
British prelate

After D. Macnee, R.S.A.

Colonel Renn Hampden, he was educated at Oriel College, Oxford, where he was fellow with Keble and Newman in 1814, and was curate in turn at Newton, Faringdon, and Hackney, principal of S. Mary's Hall, Oxford, 1833, spending £4,000 on the buildings, and professor of moral philosophy, 1834. His Bampton lectures, 1832, on The Scholastic Philosophy Considered in its Relation to Christian Theology, discussing the injurious effect of scholasticism on Protestant truth, were regarded as heretical.

His appointment as regius professor of divinity, 1836, was vigorously opposed by Newman, Pusey, and others, but defended by Arnold. His nomination in 1847 as bishop of Hereford was opposed by 13 bishops and led to ineffective litigation, his consecration taking place in 1848. His writings include Lectures on Moral Philosophy, 1856; and The Fathers of Greek Philosophy, 1862. He died in London, April 23, 1868. See Memorials, by his daughter, H. Hampden, 1871; Reminiscences, T. Mozley, 1882; The Case of Dr. Hampden, R. Jebb, 1849.

Hampshire. County of southern England, officially the county of Southampton. It has a coast-line

on the English Channel, where are the openings of Southampton Water and Portsmouth Harbour. The Isle of Wight



Hampshire. Badge
of county of South-
ampton

forms part of the county, although it has a separate county council, and is described in a separate article. In the N. are the downs, low ranges of hills rising up to nearly 1,000 ft. in places, and in the W. is the New Forest. The chief rivers are the Itchen, Test, Avon, Hamble, and Lymington. The area of the county, including the Isle of Wight, is 1,623½ sq. m.

Hampshire is mainly an agricultural county, a feature being the number of sheep reared. There are also many pigs. Wheat, barley, and oats are grown, but there is a considerable area of waste or forest land, including, in addition to the New Forest, the forests of Bere, Woolmer, and Alice Holt.

Winchester is the capital. The largest towns are the two great seaports, Southampton and Portsmouth; the county also includes Bournemouth, Southsea Aldershot, and Eastleigh.

There are a number of small market towns. Some of these, e.g. Andover, Basingstoke, Christchurch, Romsey, and Lymington, are boroughs with a long history behind them; others, although not now boroughs, are equally old, e.g. Petersfield, Fareham, Alton, Odham, Whitechurch, and Stockbridge were, at one time or other, represented in Parliament. Farnborough and Gosport are of more recent growth. The chief rly. line is the L. & S.W., but the G.W. and the L.B. & S.C. also serve the county. The county sends six members to Parliament, in addition to one for the Isle of Wight. It is in the diocese of Winchester.

In the county are the abbey ruins at Beaulieu and Netley, and the beautiful old churches at Christchurch and Romsey. Of old castles there remain Porchester and Hurst. There are the ruins of Basing House, Strathfieldsaye, the seat of the duke of Wellington, Hursley, and Titchborne. At Bishop's Waltham the bishop of Winchester had a palace, while Porchester was a Roman station. Notable houses include Heron Court, near Christchurch, and Broadlands, once the residence of Lord Palmerston. Hampshire was the birthplace of English cricket. Pop., Isle of Wight exclud., (1921) 410, 223. (See New Forest; Wight, Isle of.)



Hampshire. Map of the South of England county, which includes the Isle of Wight

LITERARY ASSOCIATIONS. Hampshire was first notably used as a literary background in Gilbert White's *Natural History of Selborne*. Jane Austen made capital out of the comfortable classes of the county in which most of her life was spent (Steventon and Chawton). Cobbett extended his *Rural Rides* into Hampshire. Charles Kingsley dealt with the county in *Yeast*, described the road to Winchester in *Hereward the Wake*, and the *Hartford Flats* in *Madam How and Lady Why*.

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Hampshire. British cruiser. The first Hampshire fought under Blake in 1655, and thenceforward there was a Hampshire in most of Britain's naval battles down to the end of the 18th century. The last ship to bear the name was a cruiser of the Devonshire class. Her length was 460 ft., beam 68½ ft., displacement 11,000 tons.

On June 5, 1916, off the Orkneys, in extremely rough weather, the

Hampshire, which was conveying Lord Kitchener on a mission to Russia, ran into a minefield and sank. There were only twelve survivors out of her complement of over 600 officers and men, among those lost being Lord Kitchener (*q.v.*) and his staff.

Hampshire Regiment. Formerly the 37th and 67th Foot. Raised in 1702 and 1758 respectively, this regiment first saw active service in Holland, afterwards taking part in Marlborough's battles at Dettingen, 1743, and Minden, 1759, it played a notable part. The regiment formed a por-



Hampshire Regiment badge



H.M.S. Hampshire, the cruiser in which Lord Kitchener was travelling when she sank

Cribb, *Southsea*

tion of the "fighting brigade" employed against the French in Holland, and distinguished itself at Tournai, 1794, and Barossa, 1811. Later campaigns include the Indian Mutiny, the China War, 1860-61, the Afghan War, 1878-80, and the Burmese War, 1885-87. After the S. African War it saw field service in Somaliland.

In the Great War battalions of Hampshires, regular and territorial, served in every theatre of war. The 1st battalion, as part of the 11th brigade, fought at Mons and in later battles on the W. front. The 2nd was part of the 29th division. The depot is at Winchester. See *The Battle Story of the Hampshire Regiment*, F. E. Stevens, 1920.

Hampson, WALTER (b. 1864). Yorkshire poet. Born at Rothwell, Yorkshire, he entered the railway service and became an engine driver. Beginning to write poems in the Yorkshire dialect, he won the name of the Footplate Poet, while he also edited *The Yorkshire Clock Almanack*. His poems include *Songs of the Line*; *Tykes Abroad*; and *A Wheel in Wharfedale*. See *Anthology of Yorkshire Verse*, F. W. Moorman, 1916.

Hampstead. Parl. and mun. bor. and residential district of N.W. London. Occupying about



Hampstead arms

3½ sq. m., it is served by the Hampstead (Tube), N.L., Midland, and District Rlys., and has good bus and tram services. Modern buildings include the town hall; public library; New and Hackney Colleges (Congregational); Westfield College for Women; University College School, 1907; Hampstead General Hospital, on the site of Bartrum House, once the residence of Sir Rowland Hill; New End Military Hospital; Mount Vernon Hospital; Royal Soldiers' Daughters' Home, and Sailors' Orphan Girls' Home. The church of St. John, 1747, replaced a structure pulled down in 1745, and contains a bust of Keats, by Anne Whitney, presented by Americans.

In the churchyard were buried Sir James Mackintosh, Joanna Baillie, who lived at Bolton House, in 1806-51; Lucy Aiken, John Constable, George



Hampstead. Church Row, a characteristic street of the North-West London borough

Du Maurier, who lived at New Grove House, 1874-95, and Sir Walter Besant.

For long a favourite residence of artists and literary men, Hampstead is full of interesting associations. Dr. Johnson wrote *The Vanity of Human Wishes* at Priory Lodge, 1749; Clarkson Stanfield lived at Stanfield House; Sir Harry Vane was arrested at his residence here in 1660; Keats, who wrote *Hyperion* and *The Eve of St. Agnes* at Lawn Bank, also lived in Well Walk, as did Constable. Other notable inhabitants include Romney, William Blake, Akenside, Arbuthnot, Mrs. Barbauld, Mrs. Siddons, Shelley, Leigh Hunt, Steele, Talleyrand, Sir T. Palgrave, Edward Irving, Baron Erskine, Lord Mansfield, the 1st earl of Chatham, Spencer Percival, Sir Spencer Wells, and Sir Charles Dilke.

The manor, first mentioned in 978 and referred to in Domesday, is owned by the Maryon-Wilson family. The history of Hampstead is linked with that of Belsize, and it was part of Hendon in the 16th century. With Highgate (*q.v.*), it was once a favourite hunting ground. Its chalybeate wells are said to have been known to the Romans, and Well Walk, Wellside, and Flask Walk recall the days in

28 metropolitan boroughs. It returns one member to Parliament. Pop. of bor., 86,080. See Bull and Bush; Jack Straw's Castle; Ken Wood; Spaniards, The.

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Hampstead Garden Suburb. Residential suburb of N.W. London. Situated N. of Hampstead Heath Extension, of which it was an outcome, and E. of Golder's Green (*q.v.*), it was founded by Mrs. Henrietta Octavia Barnett, and is owned and managed by a trust. Mrs. Barnett set out the scheme in Feb., 1905, and, aided by Earl Grey, Sir Robert Hunter, Bishop Winnington-Ingram, and others, was able to form a company in March, 1906, when the 240 acres were purchased from the Eton College trustees. The land had not previously changed hands since the time of Henry VIII. The first sod was cut May 4, 1907. The scheme aimed at doing something to meet the housing problem, to lay out the suburb on an orderly plan, to provide houses for all classes, and to preserve natural beauty. The main buildings include three places of worship, an

the 18th century when it was a fashionable spa, the scene of novels by Fanny Burney and Samuel Richardson. The famous Kit-Kat Club (*q.v.*) met at the Upper Flask Tavern, now Upper Heath, where George Stevens, the Shakespearean scholar, lived in 1771. Hampstead is one of the

educational institute, art and music schools, invalid children's school, council school, homes of rest, convalescent cottage, and a club house for working women. See Garden City.

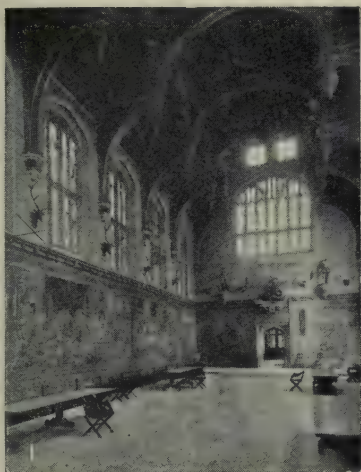
Hampstead Heath. Open space in N.W. London. It occupies the summit and N. slopes of Hampstead Hill, at an elevation of 430 ft. above sea level. From its higher stratum of Bagshot sand, some 80 ft. thick above the London clay, issued the Holbourne, Tybourne, and other streams which once traversed the capital. The heath, famous for its firs, broken hillocks, wild gorse, grassy glades, extensive views, and old inns, covers 250 acres, Parliament Hill (265 acres) and Golder's Hill (36 acres) adjoining. In the 16th century it was noted for the variety of plants growing upon it.

Down to the early days of the 19th century a haunt of highway robbers, fairs and races were once held here, and it is a popular Bank Holiday resort. Preserved from enclosure by the Metropolitan Commons Act, 1866, the greater part was acquired as a public recreation ground in 1870, additional ground being added in 1907. Old inns on and near the Heath are The Bull and Bush, Jack Straw's Castle, and The Spaniards.

Hampstead Murder, THE. The dead body of a baby was discovered, Oct. 24, 1890, in a field near Finchley Road, London; and at the same time the discovery was made of the dead body of a woman near Crossfield Road, Hampstead. They were found to be the wife and child of F. S. Hogg. The last place they had visited alive were the rooms of Mary Eleanor Wheeler (Mrs. Pearcey). This woman had known the husband before his marriage, and in a fit of uncontrollable jealousy decoyed Mrs. Hogg with her baby to her rooms and there murdered them. She was convicted Dec. 3 and executed Dec. 23, 1890.



Hampstead Heath. The view from the flagstaff, looking west towards Harrow



Hampton Court. 1. Interior of the Great Hall, built by Henry VIII, 1530-35. 2. West Front and Great Gatehouse, built by Cardinal Wolsey. 3. Ann Boleyn's Gateway, in which is the entrance to the Great Hall. 4. Fountain Court, designed by Sir Christopher Wren

Hampton. Urban dist. and village of Middlesex, England. It stands on the Thames, 15 m. S.W. of London, on the L. & S.W.R. Hampton Court (*q.v.*), 1 m. to the S.E., and Bushey Park (*q.v.*) are within its boundaries. The parish church of S. Mary is on the site of an older structure, was built in 1830, and enlarged and restored in 1888 and 1898; in the churchyard lies Huntington Shaw (d. 1710), who wrought the iron gates at Hampton Court.

At Garrick Villa, formerly Hampton House, E. of the church, David Garrick lived, 1754-79. There is a 16th century grammar school. To the W. of the village are large waterworks under the control of the London Water Board. Near are Kempton Park and Hurst Park racecourses; Hampton has a ferry to Molesey Hurst. The manor, which belonged in Edward the Confessor's time to Earl Algar, is mentioned in Domesday, and was once held by Wolsey. Pop. 9,220.

Hampton, WADE (1818-1902). American soldier and politician. Born at Columbia, S. Carolina, March 28, 1818, he studied law but did not practise. Though opposed

in sentiment to the disintegration of the union, he joined the Confederate army on the outbreak of the Civil War, and became a brigadier-general of cavalry and eventually lieutenant-general. He played a notable part in reconstruction in the south. He was governor of S. Carolina, 1876-79, and a member of the U.S. senate, 1879-91. He died at Columbia, April 11, 1902.

Hampton Court. Palace on the left bank of the Thames, between Hampton and Hampton Wick, Middlesex, 15 m. S.W. of London Bridge. Built by Cardinal Wolsey in 1515, and surrendered by him to Henry VIII in 1526, it remained a royal residence until the time of George III. The red brick buildings, containing more than 1,000 rooms, cover 8, and the gardens 44, acres.

The E. and S. wings were built by Wren; the gardens were laid out for Charles II and William and Mary. The state apartments were restored and opened to the public in 1839; the Haunted Gallery, made public in 1918, is said to be visited by ghosts of Strafford, Jane Seymour, Catherine Howard, and Mrs. Penn, Edward VI's nurse. The Chapel Royal was opened to the

public in 1918. Many paintings and tapestries and an astronomical clock are to be seen. Features of the gardens are the grape vine, planted 1768, the Maze, and the Long Water. The Home Park covers 600 acres; adjacent is Bushey Park (1,000 acres), famous for its chestnut avenue and tame deer. The old moat was opened up in 1910.

At Hampton Court, Edward VI was born, Jane Seymour died, Catherine Howard was disgraced, Henry VIII married Catherine Parr, Philip and Mary, also Charles I and Henrietta Maria, spent their honeymoons, Charles I was a prisoner, James I presided over the Prayer Book conference, the authorised version of the Bible was planned, and William III was injured while riding. Present residents are principally royal pensioners. See Hampton Court, E. Law, 1891; J. Cartwright, 1910.

Hampton Court Conference. Conference arranged by James I in 1604 at Hampton Court between the bishops and four representatives of the Puritan clergy. James had just ascended the English throne, and the Puritans had petitioned him to recognize their

views as to certain changes in the prayer book and upon ceremonies and vestments. The proposals of the petitioners were rejected, and James administered a scolding to their representatives. *See Puritans.*

Hampton Roads. Channel at the lower end of the James river, Virginia, U.S.A. It carries the waters of the James and two other rivers into Chesapeake Bay, and is a strongly defended naval station. Along its shores are several good harbours, including Norfolk, which make it a commercial highway of great importance.

Hampton Roads, BATTLE OF. Naval engagement during the American Civil War, March 8-9, 1862. On March 8 three Confederate ships, the largest of which was the ironclad Virginia, formerly the U.S. Merrimac, entered Hampton Roads, set fire to the Federal frigate Congress, and sank the sloop Cumberland. The Confederates got away with little damage, but the same evening the Federal ironclad Monitor, which had been launched earlier in the year, steamed into the Roads, and the following morning put out to give battle to the Merrimac. The latter vessel was already crippled, and the action of the Monitor during the engagement and her superiority over the Merrimac were a signal success for her designer, Ericsson (*q.v.*). This was the first encounter between armoured warships. *See American Civil War.*

Hampton Wick. Parish and village of Middlesex, England. It is situated on the Thames opposite Kingston, with which it is connected by a bridge, and is 2½ m. E. of Hampton on the L. & S.W.R. The church of S. John Baptist was enlarged 1887. The duc de Nemours lived at Bushey House. Steele lived at Hampton Wick for a time, and Timothy Bennet, who secured the public way through Bushey Park, was a native. Pop. 2,417.

Hamrin Hills OR **JEBEL HAMRIN.** Range of hills in Mesopotamia. It came into prominence during the Great War in the course of the British operations against the Turks, who were defeated here in April, 1917. It runs N.W. from the Diala, an eastern tributary of the Tigris, to the Tigris about the village of Fathah, and is traversed from N. to S. by the Shat el Adhaim, another of the affluents of the great river. The average height is from 2,000 ft. to 3,000 ft. *See Mesopotamia, Conquest of.*

Hamster (*Oricetus frumentarius*). Small rodent, common in Asia and northern Europe, especially in some parts of Germany. It is

about a foot long, and has about 2 ins. of tail. The thick fur is yellowish brown in colour and very glossy, and has a modest value in the trade for lining garments. It lives in burrows, rather elaborately constructed, consisting of a dwelling chamber and a granary connected by galleries and provided with separate tunnels for entrance and exit.

Sometimes four or five granaries will be found in a single burrow. These are used for storing corn for consumption in winter, during which season the hamster keeps below ground and spends most of its time in profound sleep. Separate burrows of a simple kind are constructed for the summer, in which the young are reared. Two families, ranging in number from six to eighteen, are reared every season, hence the hamster often becomes a most destructive pest to crops. Its flesh is eaten by the country people.

Hamsun, KNUT (b. 1859). Norwegian author. Brought up as a cobbler in the Lofoten Isles, his literary talent showed itself at an early age. After an unsuccessful attempt to graduate at Christiania University, and an equally futile endeavour to make his way in



Knut Hamsun,
Norwegian author

America, he obtained employment in the Newfoundland fisheries. In 1888, however, his *Sult*, a novel, was published in a Danish magazine, and immediately brought him fame. His output thenceforward was considerable and his novels have been translated into many languages. *Hunger* (*Sult*), 1899, and *Growth of the Soil*, 1914, are the best known in English translations. They were followed in 1921 by *Konerne ved Vandposten* (*The Women at the Well*). In 1920 he was awarded the Nobel prize for literature.

Han. River of China. It takes its rise in the Ta-pa-ling mts. of Shensi, and flows E. and S. across the provs. of Shensi and Hupeh, to effect a junction with the Yangtse-Kiang at Hankow. Floods are common, but the river is navigable



Hamster, a North
European rodent

by small craft to Simpuwan, a distance of 1,260 m., and for large junks to Fancheng, 450 m. Much traffic is carried on the river, which is 1,300 m. in length, and passes several important towns. The river has several times changed its course.

Hanaper (late Lat. *hanaperium*, hamper). Name given to a wicker basket in which documents were kept in the English chancery, and so to a department of that court of law. Controlled by the clerk of the hanaper, it received the fees for sealing charters, patents, and writs under the great seal. Abolished in England, the office survives in Ireland, where the clerk of the crown and hanaper issues writs for parliamentary elections.

Hanau. Town of Germany, in Hesse-Nassau. Situated in fertile country near the junction of the Kinzig and the Main, 14 m. by rly. E. of Frankfurt, it is a busy industrial centre, still famous for its jewelry, especially diamond-cutting, and gold and silver goods, the manufacture of which was introduced by refugees from the Low Countries in the 17th century. Other manufactures include carpets, leather, porcelain, tobacco, etc. There is a monument to the brothers Grimm (*q.v.*), who were natives. In the neighbourhood is the former electoral palace of Philippsruhe, famous for its orangeries, and the mineral springs of the Wilhelmshad. To the N.E. is the battlefield where on Oct. 30-31, 1813, Napoleon defeated the allied force which was attempting to follow up the victory of Leipzig. Pop. 37,500.

Hancock, WINFIELD SCOTT (1824-86). American soldier. Born at Montgomery Square, Pennsylvania,



Winfield S. Hancock,
American soldier

Feb. 14, 1824, he was educated at the military academy of West Point. On the outbreak of the Civil War he was appointed brigadier-general of volunteers, and by 1864 he held the same rank in the regular army. He was present at Williamsburg, at Fredericksburg, at Chancellorsville, where his skilful handling of his troops saved the Federals from complete rout, and at Gettysburg, where he again displayed great powers of leadership. He also did good service in the Wilderness campaign. In 1880 he stood for the presidency as a Democrat, but he was defeated by James A. Garfield. He died near New York, Feb. 9, 1886. *See Life, F. A. Walker, 1894.*

Hand. Prehensile extremity of the arm. It consists of three divisions—the carpus or wrist, the metacarpus, and the phalanges of the fingers. The carpus consists of eight small bones arranged in two rows. From the radial to the ulnar side, the bones of the first row are the scaphoid, lunar, pyramidal, and pisiform. Those in the second row are the trapezium, trapezoid, os magnum, and unciform. The metacarpus consists of five long bones, which articulate at the upper end with the wrist, and at the lower end with the first phalanges of the fingers. The phalanges are fourteen in number, three for each finger and two for the thumb.



Hand. Left, of a negro from the Blue Nile; right, of a very aged gorilla, showing the shorter thumb typical of the apes

The hand is supplied with blood-vessels derived from the radial and ulnar arteries of the forearm. The palm of the hand is protected by a strong and dense layer of tissue lying beneath the skin, known as the palmar fascia. In middle-aged persons, particularly those who suffer from gout, this fascia may become contracted, causing some of the fingers, most often the ring and little fingers, to be drawn in towards the palm, thus seriously crippling the hand. This condition, known as Dupuytren's contraction, as a rule requires operative treatment. There is no fundamental difference between the hands of the higher apes and those of man. The chief difference is in the thumb, always shorter in the ape. It is most human in proportions in the chimpanzee, and in some of the Anthropoidea is practically absent. See *Anatomy*.

Hand. English measure of length. Like foot, it originated from a human limb, being the breadth of a man's palm. After a time a fixed length was given to it and it is now 4 ins. It is only used for measuring horses.

Handbells. Small bells of sweet tone, used both for the sake of their own music, and also for



Handbells. Set of bells in diatonic scale

practising the changes (*q.v.*) for ringing on church bells. One player can easily control four handbells, two with each hand, if their handles are leather loops, and the clappers only act when swung in one direction. Parties of five or six players can thus operate a large number of bells, and perform elaborate music in harmony. See *Campanology*.

Handcuffs. Devices for fastening the wrists of prisoners. Modern handcuffs consist of two metal rings adjustable to various sizes by means of a ratchet, and fastened together by a short length of chain. Formerly handcuffs were rigid, and a police officer was compelled to carry two or three sets when he went to arrest a prisoner. Handcuffs with no connecting chain, shaped like a figure eight, fixed the wrists in one position, and often caused great pain. Some handcuffs fit only on one wrist, the other part being held by the officer in charge of the prisoner. Snap-handcuffs enable a detective to imprison one wrist of an offender with a single movement. Nippers are a variety of those handcuffs which are used only on one wrist, the other part of the handcuff forming a handle. Twisters are a similar arrangement, the metal ring being replaced by a short length of chain that can be twisted round the prisoner's wrist. The latter are not used in Great Britain.

Handel, GEORGE FREDERIC (1685-1759). Musician. He was born at Halle, in Saxony, the son of a surgeon-barber, Feb. 23, 1685. At a very early age he revealed the possession of great musical gifts, but received no encouragement from his father to develop them. Eventually he became a pupil of Zachau, organist of the cathedral at Halle, and spent some time in Berlin, afterwards becoming organist at Halle. In 1703 he went to Hamburg and played the violin in the orchestra of the Opera House; then his first opera, *Almira*, was produced in 1705. He went to Italy for three years to study the methods of Italian opera

composers, and whilst there produced several operas with great success.

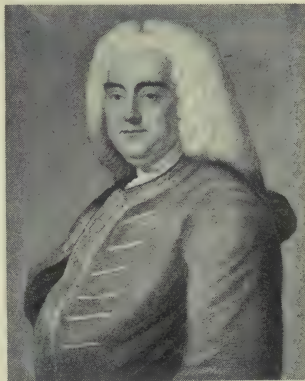
In 1710 Handel returned to Germany, and was appointed "chapel-master" to the elector of Hanover, afterwards George I of England. The same year he came to England, where, apart from a few short visits to Germany, he spent the remainder of his life. He introduced himself to English audiences by his opera *Rinaldo*, which aroused great enthusiasm. Other operas followed; also a *Te Deum* to celebrate the peace of Utrecht in 1713. For some time he was organist to the duke of Chandos at Canons, Edgware. In 1719 the Royal Academy of Music was established for the performance of opera, and Handel specially composed many operas



Handcuffs. Pair of handcuffs in common use by the British police

for this society, which came to an end in 1728. He then became interested in other operative schemes, which, however, were unsuccessful owing to financial difficulties, the quarrels of singers, and the opposition of rival composers.

He next turned to oratorio, and began that series of sacred works upon which his fame rests. *Saul* and *Israel in Egypt* were composed in 1739, the *Messiah* and *Samson* in 1741, *Judas Maccabeus* in 1746, and his last oratorio, *Jephtha*, in 1751. Shortly after this he became



George Frederic Handel

From a picture in Windsor Castle

totally blind, and died April 14, 1759. Handel's many operas are now known only by name, and by a few isolated songs. On the other hand, his finest oratorios are universal favourites. The grandeur of their great choruses, considering the simplicity of the musical material upon which they are built, still remain unequalled. See Handel, W. S. Rockstrow, 1883; Handel and his Orbit, P. Robinson, 1908; Handel, R. A. Streetfield, 1909.

Handfasting. Form of provisional marriage formerly prevalent in Scotland, so called because the couple exchanged vows holding hands. They were then legally entitled to live together as man and wife for a year and a day, after which period they could either part or be married permanently. The child of a couple who parted was supported by the parent who severed the union. Handfasting was also the old English name for betrothal. See Marriage.

Hand-grenade. One of the older weapons of warfare. Hand-grenades were used as early as the first half of the 16th century, and at that period were probably earthenware cases filled with gunpowder. It is said that they were used with considerable effect at the siege of Arles in 1536.

The use of this weapon appears to have considerably diminished during the Napoleonic wars, but did not entirely cease, as it was used at Saragossa (1808-9), Antwerp (1832), Sevastopol (1854-56), and by British troops in the Sudan (1884-86). It did not attain a position of any importance after about 1790, however, until the Russo-Japanese War, when it was again used with great effect. During the Great War, when trench fighting became such a marked feature, the hand-grenade had a great revival.

A hand-grenade can usually be thrown to a distance of about 50 yards, and should not, therefore, have an explosive effect over a greater radius than 30 yards. The provision of a suitable fuse is a matter of difficulty. A percussion fuse may detonate the grenade if the thrower accidentally strikes the rear of the trench in swinging, and a time fuse if too long enables the enemy to throw the missile back, while if the fuse is short the grenade explodes either harmlessly in the air or amongst the throwers. See Ammunition; Bomb; Explosives; Grenade; Grenadier; Rifle Grenade; Stokes Gun.

Handicap. In sporting contests, term denoting the bringing together, by means of penalties and allowances, the various competitors in such a manner as to afford an equal chance to each. In foot-

racing, billiards, etc., this is accomplished by giving a start to the runner or player who is the inferior performer. In horse-racing, handicapping is effected by apportioning different weights to the various horses entered. All races or contests conducted under these conditions are designated handicaps. The word is a contraction of hand in the cap, in reference to the method of drawing lots. See Golf; Horse Racing.

Hand-in-Hand. English insurance company, now incorporated with the Commercial Union.



Hand - in - Hand Insurance Co.'s fire-mark, or plate affixed to insured premises

amicable contribution. This became the amicable contributorship, and later the Hand-in-Hand, derived from the clasped hands on its fire-mark. In 1836 the company began to undertake life insurance. In 1717 an office was opened in the city, and for long the head office was at Angel Court, Snow Hill. The next building was pulled down in 1874 to make room for Ludgate Circus, after which the offices at 26, New Bridge Street, were opened. In 1905 it amalgamated with the Commercial Union Assurance Co.

Handkerchief. Square of linen, cotton, or silk for wiping the nose. It came into use about the time of Henry VIII, and Elizabeth's reign saw handkerchiefs decorated with lace and made of silk. A muckinder or muckender was a handkerchief usually attached to the girdle, and worn by children about the beginning of the 17th century.

Handley Page. British aeroplane. It was the first really large aeroplane ever built, the forerunner of the Italian Caproni and the German Gotha. A biplane constructed for bombing enemy lines, communications, and quarters, one of the first machines completed in 1915 took twenty people up to a height of 7,000 feet on a trial flight, and since then big strides in construction and performance have been made.

In the Great War a Handley Page machine flew from England to Constantinople on a bombing raid, and, after the declaration of the armistice, the feat of flying

from England to India in stages was also performed. With a wing span of well over a hundred feet, the early types of Handley Page machines were driven by two Rolls-Royce engines, developing a total horse-power of over five hundred; but the later models are more than twice as powerfully engined. Characteristics of the Handley Page are the large balanced ailerons, biplane tail and twin rudders, and the long, deep fuselage affording accommodation for passengers. See Aero-engine; aeroplane; Page, F. Handley.

Handsel. Earnest money. Payment by a purchaser of part of an agreed sum into the vendor's hand to bind a contract. The word is also applied to the first money taken at a market or on opening a new business, and in the north of Great Britain to presents made for luck. Thus in Scotland Handsel Monday is the popular name for the first Monday in the year, when, as on Boxing Day in England, presents of money are given in token of good will.

Handsworth. Urban district and parish of Yorkshire (W.R.). It is 4 m. S.E. of Sheffield, and is mainly a mining district. Other industries are quarrying and nursery gardening. The church, an old structure, is dedicated to S. Mary. Pop. 14,200.

Handsworth. District of Birmingham. Until 1911, when it was incorporated with that city, it was a separate urban district, with a population of 60,000. Lying to the N.E. of the city proper, it is in Staffordshire, and until 1918 gave its name to a parliamentary division of that county. It is chiefly an industrial area, having many works for the manufacture of machinery, hardware, etc. It is served by the G.W. Rly., while tramways also connect it with the centre of the city. See Birmingham.

Handy Andy. Chief character in Handy Andy, an Irish story, by Samuel Lover, 1842. The book is full of frolicsome fun, and long set a sort of standard for Irish humour of the more farcical kind. Handy Andy himself is a typical blunderer, and many of the episodes were long popular as readings or recitations.

Hangar. Shed, usually canvas covered, for housing flying machines. The canvas is stretched over a wooden, bolted framework. During the Great War hangars were very commonly used both abroad and in Britain where permanent sheds did not exist, and were often so skillfully camouflaged that it was frequently a very difficult matter for hostile aircraft to see them from above. See Airship.

Hangard. Village of France, in the dept. of Somme. It is $1\frac{1}{2}$ m. E. of Domart, and was the scene of heavy fighting, April 4-5, in the German offensive of 1918. The wood, which is 1 m. north of the village, was entered by the Germans on April 5, which carried them to within 9 m. of Amiens, the nearest they approached to that important centre in this year. The British offensive of Aug. 8, 1918, which freed Amiens, recovered Hangard Wood. See Amiens, Battle of.

Hang-chow OR **HANG-CHAU.** Treaty port and town of China, capital of Che-kiang prov. It is on



Hang-chow, China. The old gate in the city walls

the Tsien-tang river, and was opened to foreign trade in 1896. It is 118 m. S. of Shanghai, with which it is connected by rly. and waterways. The tide in Hang-chow bay, at the mouth of the Tsien-tang river, forms a bore twice daily, varying in height from a few feet to 15 ft. or 20 ft. (at times even 30) at the equinoxes. Pop. 594,000, and about 200 foreigners.

Hang-chow Bay. Large inlet of the E. China Sea, indenting the shore of the prov. of Che-kiang. It penetrates inland for about 110 m. and receives the waters of the Tsien-tang Kiang, on which, 20 m. from its mouth, stands the port of Hang-chow. At its entrance, between Cape Yang-tse on the N. and the island of Chusan on the S., the distance is 52 m.

Hanging. Death from constriction of the neck, the constricting force being the weight of the body. In modern judicial hanging, in which a long drop is allowed, death is practically instantaneous, being due to fracture or dislocation of the upper cervical vertebrae which produces compression or rupture of the spinal cord (breaking the neck). In the old form of execution, which was practised at Tyburn, the noose was placed round the neck of the condemned person while standing on a cart, which was then driven away from beneath him. In this case, and in most suicidal hangings,

death is due partly to asphyxia and partly to arrest of the circulation in the brain by compression of the large blood-vessels in the neck. Hanging is the method of committing suicide most frequently adopted by males, but is less common among females.

In 1918 the number of suicides in England and Wales from hanging was 616 (males 462, females 154). Accidental death from hanging is rare, but occasionally persons working among ropes have become entangled and killed. Murder by hanging is almost unknown, but several instances are recorded of a murderer suspending the body of his victim after death in order to suggest suicide. See Capital Punishment; Execution.

Hanging Gardens of Babylon.

One of the seven wonders of the ancient world. Situated within the confines of the palace of Nebuchadrezzar, they occupied a space of some four acres, and were in a series of terraces, resting on arches and rising to 300 ft. above the level of the plain. They contained a profusion of the choicest flowers, groves of trees, secluded arbours, and banqueting halls, and were watered from a reservoir at the highest point in direct artificial connexion with the Euphrates. The gardens were probably laid out by Nebuchadrezzar, though other traditions associate them with Semiramis. See Babylon.

Hanging Valley. Tributary valley leading to an over-deepened main valley. Many valleys in mountainous districts have been considerably deepened below the level of the side valleys. The rivers of these tributary or hanging valleys descend to the main stream by waterfalls. Geologists differ as to the cause which deepened the main valley, but the general belief is that they were produced by glacial erosion, and this is supported by the fact that they are especially numerous in glaciated regions. Some hanging valleys still contain glaciers. See Fiord.

Hangnest. Popular name for a large group of American birds (*Icteridae*) known also as troupials. Related to the starlings, they take their name from the curious nests they construct. These are closely woven of grass and hair, are rather purselike in shape, often 2 ft. long, with the entrance near the bottom, and hang from the slender branches of trees. As many as 40 of these nests have been found in a single tree.

Hangö (Finnish *Hankoriemi*). Fortified port in Finland. It is on the peninsula Hangö-Udd, at the entry to the Gulf of Finland, and the terminus of the coast rly. from Petrograd. The harbour is safe, and there is a good shipping trade. The chief exports are butter, timber, and paper. The sea baths are much patronised. Pop. 4,000.

Hank. Standard measure of length; also a convenient form in which to put up yarns for transit. Thread is wound off a bobbin round the arms of a reel. Eighty wraps round the $1\frac{1}{2}$ -yard reel used in cotton yarn represent one lea or 120 yds. Seven leas equal 840 yds., or one cotton hank. For measuring worsted yarns the reel has a circumference of one yard; the worsted lea is thus 80 yds., and the worsted hank 560 yds., or one-third less than cotton. The linen lea is 300 yds., and the spun silk hank is of the same length as cotton.

The hank is in effect a large skein and after being measured it is tied with a thread which separates lea from lea and holds the end of the thread. The hank is knotted for convenience by being twisted and folded back upon itself. The hanks are then bundled into neat packages normally of 10 lb. weight. See Cotton.

Hankau. Treaty port of China, in Hu-peh prov. It is situated on the left bank of the Yang-tse, 600 m. from the mouth, at the junction of the Han river. Founded during the Ming dynasty, it was left in ruins by the Taiping Rebellion (1853-60), but was opened to foreign



Hankau. The native quarter of the Chinese treaty port

trade, 1862. Hankau is connected by rly. with Peking, 755 m. distant, and is accessible to ocean-going steamers during summer. With Hanyang, across the Han river, and Wuchang, on the S. bank of the Yang-tse, it forms the foremost trading centre in central China, only surpassed in importance in the whole of China by Shanghai. Pop. of the three cities variously estimated between 826,000 and 1,443,950. In Hankau there are British, Russian, French, and Japanese settlements, with a total foreign population of 3,000.

Hankey, Sir Maurice Pascal Ailers (b. 1877). British civil servant. Born April 1, 1877, he was



Sir Maurice Hankey,
British civil servant
Russell

educated at Rugby. He entered the Royal Marine Artillery in 1895, and served for some years with the fleet. In 1902 he joined the naval intelligence department, which

led to his becoming assistant secretary to the committee of imperial defence. In 1912 he was promoted to be secretary, and in 1916, on its formation, he acted in a similar capacity to the war cabinet. In 1919 he was made secretary to the Cabinet. Made a K.C.B. in 1916, Sir Maurice had much to do with the preparations for the peace conference of 1919, and was the British representative on its secretariat. In 1919 he was created G.C.B. and awarded £25,000 for his services during the war. In 1923 he became clerk of the privy council. See Cabinet.

Han-Kiang. River of China, mainly in the provs. of Hu-peh and Shen-si. Rising in the Tapaling mts. at the S.W. corner of the prov. of Shen-si, it winds in a generally E. or S.E. course, to join the Yangtse-Kiang near Hankau. The towns of Haunchung, Sing-Ngan, and Yuen-yang are on or near its banks. Its length is est. at 900 m.

Hanley. District of Stoke-upon-Trent, formerly a county borough and market town. It is 18 m. from



Hanley arms

Stafford and 148 m. from London, being served by the N. Staffs. Rly. and by tramways. The chief buildings are the town hall, Victoria Hall, public library, school of art, and technical museum, as well as

a number of churches. The staple industry is the manufacture of pottery of all kinds from china-ware to tiles; there are also foundries and ironworks, while around are extensive coal mines. A modern place, Hanley developed with the growth of the pottery industry. It was made a borough in 1857, and in 1910 was included in the borough of Stoke-upon-Trent. It had then a population of 66,000, being the most populous of the so-called Five Towns. See Potteries; Stoke-upon-Trent.

Hannah. Wife of Elkanah and mother of the prophet Samuel (1 Sam. 1 and 2). Samuel was born in answer to prayer, and she dedicated him to God's service, taking him to Eli, the high priest, to become his attendant. Fairly common as a Christian name, Hannah means in Hebrew, grace.

Hannay, James (1827-73). Scottish author and journalist. Born at Dumfries, Feb. 17, 1827, he entered the navy in 1840, but left it in 1845. He then became a journalist, working for The Morning Chronicle and other papers, before serving, from 1860-64, as editor of The Edinburgh Courant. From 1868-73 he was British consul at Barcelona, and he died Jan. 8, 1873. Hannay's voluminous writings include novels, essays, and miscellaneous articles. Satire and Satirists, 1854, and Characters and Criticisms, 1865, show his literary knowledge and taste. His novels include Hearts are Trumps, 1848; Singleton Fontenoy, 1850; and Eustace Conyers, 1855. He also wrote Studies on Thackeray, 1869; Three Hundred Years of a Norman House, 1867; and published a volume of Essays from The Quarterly Review, 1861.

Hannay, James Owen. Irish novelist, better known by his pen-name, George A. Birmingham (*q.v.*).

Hannen, James Hannen, Baron (1821-94). British lawyer. Born in London, he was educated at S. Paul's School and Heidelberg University, and was called to the bar at the Middle Temple, 1848. Appointed junior counsel to the treasury, 1863, he became a judge of the queen's bench, 1868, and judge of the probate and divorce court, 1872. He was president of the admiralty and divorce division, 1875-91, when he was appointed a lord of appeal and created a life

peer. In 1888 he presided over the Parnell Commission, and in 1892 was an arbitrator in the dispute concerning the Bering Sea fisheries. Strong, dignified, learned and accurate, Hannen ranks among the greatest English judges of the 19th century. He died in London, March 29, 1894.

Hannibal. City of Missouri, U.S.A., in Marion co. It stands on the right bank of the Mississippi river, 120 m. N.W. of St. Louis, and is served by the Chicago, Burlington, and Quincy, and other rlys. Among the chief buildings are the federal building, the city hall, a hospital, a high school, and a public library. The city is connected with East Illinois by a long bridge across the river, and contains a fine park of 120 acres. A thriving trade in agricultural produce, lumber, flour, and tobacco is carried on, and the industrial establishments include foundries, lumber, cigar, shoe, lime and cement factories, and wagon and machinery works. Hannibal was founded in 1819, and received a city charter in 1839. Pop. 22,398.

Hannibal (c. 247-183 B.C.). Carthaginian soldier. He was the son of Hamilcar Barca, who, after the first Punic War (264-241 B.C.), in which Rome had wrested the command of the sea from her rival, organized what was virtually an independent Carthaginian dominion in Spain. In childhood Hannibal had taken a great oath to his father that his life should be devoted to the overthrow of Rome. In Spain the boy showed such extraordinary capacity that after Hamilcar's death the soldiery demanded his appointment to the supreme command, though he was only twenty-five. Two years later, by laying siege to the allied town of Saguntum, he roused Rome to declare war upon Carthage. He at once resolved upon an invasion of Italy. With extraordinary skill he led his army from Spain through the south of Gaul in 218, defeated in the Rhône valley a Roman expedition sent to hold him in check, carried his army over the Alpine passes, as Napoleon did two thousand years later, in the face of extraordinary difficulties, descended into the Lombard plain, and routed the Roman armies at the battles of Ticinus and Trebia.

Throughout the struggle Hannibal had to live upon the country, while he was entirely dependent upon his own military genius, the small and miscellaneous but devoted and admirably trained army which he had brought into Italy, and such support as he could persuade or compel the Italian enemies of Rome to supply. The

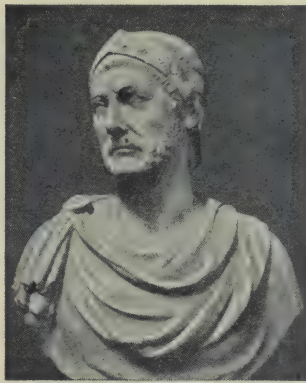


Baron Hannen,
British lawyer

Romans had the ascendancy by sea, so that he was in effect cut off from both the Spanish and African bases. In the spring of 217 he pushed southwards, ambushed the great army of the Roman general Flaminius, and annihilated it at the battle of Lake Trasimenus. Failing to force a general engagement upon the new Roman commander Fabius Maximus, he succeeded in passing by him and penetrating into Southern Italy. There, in 216, he beguiled a third Roman commander with an army of 90,000 men into fighting a pitched battle at Cannae in Apulia. This army was also annihilated, with the political effect of bringing over the S. Italians to Hannibal's side. The fact that he was still unable to besiege and capture Rome, but wintered at Capua instead of making the attempt, demonstrates the desperate character of his task.

From this time, while his ascendancy in the field was never broken, he was always struggling with diminishing resources against an inexhaustible adversary. Hannibal, like Frederick the Great in the Seven Years' War, might strike and strike again, but his blows could do no more than preserve his own army from destruction. At last, in 207, the Carthaginians threw another army under Hasdrubal into Northern Italy. Could he have effected a junction with Hannibal, the tide might have been turned; but while Hannibal was being contained in the S., the Roman general Nero, by a brilliant march, brought Hasdrubal's advancing army to action on the Metaurus and destroyed it. The battle was decisive. Hannibal remained on the defensive in the S., while the Romans crushed the Carthaginian power in Spain and in Sicily, and prepared a great expedition against Carthage itself.

Thither Hannibal was recalled in 203. But though he was placed in command, he was not, as in Italy, in effective control of veteran troops who knew and trusted him. The Carthaginian army was crushed at the battle of Zama, 202, and in the following year Rome dictated terms of peace. Hannibal then retired from Carthage, where he was made powerless by the jealousy of the oligarchical government, and withdrew to Bithynia in Asia Minor, whence he urged the enemies of Rome to make war upon her. At last, in 183, finding that his protector Prusias could not resist the Roman demands for the surrender of his person, he took poison. So perished the great soldier who as a



Hannibal, Carthaginian soldier

From a bust found at Capua, Naples Museum

military genius stands beside Alexander the Great, Julius Caesar, Marlborough, and Napoleon. See Carthage; Rome. **A. D. Innes**

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Hannington, JAMES (1847-85). First bishop of Eastern Equatorial Africa. Born at Hurstpierpoint,



James Hannington, Missionary bishop

Sussex, Sept. 3, 1847, he was educated at S. Mary Hall, Oxford. His first ministerial duties were discharged at Martinhoe, Devon. A year later he became curate in charge of S. George's, Hurstpierpoint, a church built by his father. Here he remained until 1882, when the murder of two missionaries on the Victoria Nyanza induced him to offer his services to the Church Missionary Society.

Soon after his arrival in Uganda, he was prostrated with fever, and forced to return to England. In June, 1884, he was consecrated bishop of Eastern Equatorial Africa. He reached Mombasa in Jan., 1885. In July he started for Uganda, and when almost at his goal his party was suddenly attacked by forces of King Mwanga. After being imprisoned in a grass hut for eight days he, with the men of his caravan, was murdered, Oct. 29, 1885. See Life, E. C. Dawson, 1887; Last Journals, ed. E. C. Dawson, 1888.

Hanno. Name of several eminent Carthaginians. Hanno, surnamed the Great (c. 220 B.C.), was

for 35 years the leader of the aristocratic party at Carthage which favoured peaceful relations with Rome, as opposed to Hamilcar Barca, Hannibal, and Hasdrubal, who advocated war. About 240 he was governor of Libya, where his oppression of the inhabitants caused them to revolt, in which they were supported by the Carthaginian mercenaries. Hanno was at first successful, but his inability to take advantage of his victory at Utica and his carelessness in withdrawing his forces led to a severe reverse, with the result that he was superseded by Hamilcar Barca, against whom he afterwards cherished a life-long enmity. After the battle of Zama he was one of the Carthaginian deputies sent to ask for peace. Another Hanno was a navigator who lived about 500 B.C. Having passed the Straits of Gibraltar, he undertook a voyage of discovery along the west coast of Africa, the object of which was the increase of the commercial prosperity of Carthage and the foundation of colonies. He wrote an account of his voyage, originally in the Punic language, which has been preserved in a Greek version, entitled *The Periplus* (Eng. trans. Thomas Falconer, 1797). Another Hanno took part in the battle of Cannae (216) and in later operations in lower Italy.

Hannover. Name applied to the aircraft produced by the Hannover Waggonfabrik A.G. (Germany) during the Great War. The machines were all biplanes, mostly of the two-seater reconnaissance type. One type used in 1918 had the very unusual feature of a biplane tail for a quite small single-engine machine.

Hannington, JOHN ARTHUR (b. 1868). British soldier. Born Feb. 26, 1868, he joined the Worcester-



J. A. Hannington, British soldier
Elliot & Fry

shire Regiment in June, 1889, and later transferred to the Indian army. He was employed with the King's African Rifles, 1901-10. In the Great War he was in command of a brigade, 1916-17, and, promoted major-general, rendered distinguished service in the campaign in East Africa under Smuts. He was employed in carrying out independent operations, being in command of the 2nd East African brigade. In 1916 he had charge of the encircling movement against the Germans in the Rufiji area.

Hanoi. Town of Annam, capital of the prov. of Tong-king. It stands on the right bank of the Song-ka or Red river, about 100 m. from its mouth in the China Sea, and since 1903 has been the seat of the governor-general of French Indo-China. The town, an agglomeration of several villages, occupies a large area. A fine rly. bridge, opened in 1902, spans the river, and there are extensive remains of an ancient royal palace.

The native quarter lies between the citadel and the river. The houses are mainly constructed of wood and mud, but since the coming of the French, many handsome buildings have arisen. They include the official premises, museum, hospital, theatre, and various hotels. A school of medicine for natives was opened here in 1902, and together with a European college formed into the university of Indo-China in 1917.

The twin-towered cathedral is a prominent landmark. The citadel perched on an eminence is

Hanotaux, ALBERT AUGUSTE GABRIEL (b. 1853), French historian and statesman

He was born at Beaurevoir, Aisne, Nov. 19 1853. An article by him in *La République Française* attracted the notice of Gambetta and secured him an appointment in the foreign office. In 1885 he held a position in the French legation in Constantinople. Entering political life, he was deputy for the Aisne, 1886-89, when he became conspicuous by his opposition to Boulanger. After having been director of the French foreign office, 1892, he was foreign minister 1894-95 and 1896-98.

Hanotaux was a firm supporter of the policy that brought about the



A. Hanotaux

which dated back to about the 10th century. was frequently divided among members of the reigning family. One such division became the duchy of Brunswick-Lüneburg, which was divided later into Lüneburg-Celle and Lüneburg-Calenberg, each named after its chief town. The two were sometimes united, but more often were ruled separately, until, in 1665, the former was under George William and the latter under his brother, Ernest Augustus.

Ernest Augustus, having served the emperor, Leopold I, against the French, was given in 1692 the title of elector of Brunswick-Lüneburg, and the office of standard bearer in the empire. He had made Hanover his capital, whence his little state was also known as Hanover, and that form ultimately prevailed. Its enlargement was due to the marriage between his son, George I of England, and his cousin, Sophia Dorothea, the heiress of Lüneburg-Celle, which in 1705 George inherited. He had succeeded his father Ernest Augustus as elector in 1698 and in 1714 he succeeded through his mother Sophia to the throne of Great Britain.

The Hanoverians fought against France in the various wars of the 18th century, several times suffering from the invader. In 1757 the convention of Kloster-Seven gave up the electorate to France, but it was soon regained, and the peace of 1763 left it intact. The Hanoverians were drawn, too, into the wars against France under Napoleon, and their country was more than once in the power of the conqueror.

In 1814, by the congress of Vienna, Hanover was constituted a kingdom, and certain changes were made in its area. It was then governed by a king, or in his absence by a statthalter, with the ministers responsible to him alone, and an irregular and almost powerless assembly of estates. In 1819 a constitution was given to it, but this was not sufficiently liberal, and in 1833 it gave way to a more democratic one, modelled on that of Great Britain—a parliament of two houses and a ministry responsible to it.

In 1837 Hanover was separated from Great Britain, and Ernest Augustus, duke of Cumberland, became its king. He abolished the new constitution, but in 1840, he was forced to concede one again. He died in 1857, and was succeeded by his son, George. George would not accept the modern ideas of government, and there was constant friction during his reign. In 1866 Hanover, a member of the German Bund, decided to take the side of



Hanoi, Annam. Plan of the European quarter of the city, since 1903 the seat of the governor-general of French Indo-China

a square, 1,200 yds. to each side, surrounded by a brick wall, and contains many of the public buildings. In the vicinity of the city is the Great Lake, on the shore of which is a Buddhist temple and a huge image of Buddha in bronze. The city is provided with electric tramways, and a racecourse was opened in 1890.

An important centre of trade, mostly carried on by Europeans and Chinese, Hanoi has rly. connexion with Hai-phong, the principal port, and with the Chinese town of Lung-chow. Manufactures include inlaid and lacquer ware, filigree work, mats, gold and silver wire, leather articles, and embroidery. Hanoi supplanted Saigon as capital in 1902. Pop. est. at 150,000.

1903, which was awarded the Gobert Prize by the Academy; *L'Afrique de Madagascar, 1896*; *La Seine et les Quais, 1901*; *Histoire de la France Contemporaine, 1903-8*, Eng. trans. J. C. Tarver, 1903, etc.; and *Histoire de la Troisième République, 1904*.

Hanover. Name of a European kingdom that existed from 1814 to 1866. It developed from an electorate of Hanover created in 1692, and this in turn was preceded by a duchy of Brunswick-Lüneburg. Like other German states, the duchy of Brunswick,



Hanover arms



Austria against Prussia. At once Prussia asked for her neutrality, and this being refused, invaded Hanover. In June the Hanoverian army surrendered, and the country was formally annexed in Sept. See Europe; Germany.

Hanover. Province of Prussia. It lies in the N.W. of Germany, the bulk of it being between the Weser and the Elbe, while another part is between Oldenburg and Holland. It was constituted in 1866, and in 1873 the territory of Jade was added to it. The capital is Hanover. It has a coast-line on the North Sea, and contains the ports of Emden and Wilhelmshaven. Its area is 14,870 sq. m., and its pop. 2,942,500.



Hanover. The new Town Hall, built 1903-11, overlooking the Masch Park. Top, left, view of old houses on the Leine



Hanover town arms

Hanover. Town of Prussia, formerly the capital of the kingdom of Hanover and now of the province. It stands at the junction of the Leine and the Ihme, 112 m. from Hamburg and 163 m from Berlin. There is an old town, a new town beyond it, and various suburbs, of



Hanover. Map of the Prussian province, which, until 1866, was an independent kingdom

which Calenberg is the most interesting. In the old town are the market church, dating from the 14th century and restored in the 19th, and the old town hall, of somewhat later date.

The new town has a fine church, and there are several large squares adorned with statues and monuments. Modern buildings include the new town hall, the royal and other theatres, the new provincial, old provincial, archaeological, Kestner, and other museums; also the art gallery (Kunstlerhaus). The royal library contains a fine collection.

The palace, built in 1635-40, is a reminder of the time when Hanover had its own sovereigns. Just before the end a more magnificent residence was erected for them; known as the Guelph Palace, this now houses the technical high school. Some extensive woods around the town have been made into a public park. Hanover is a railway junction and has a large number of manufactures, including machinery, hardware, cloth, chemicals, linen, and rubber goods.

Hanover is first mentioned in the 13th century. It was on the lands of the family of Welf, but its importance began in the 16th century, when one of the branches of the family made it the chief of one of the little Brunswick duchies. Later it became the capital of the electorate. Pop. 302,500.

Hanover Square. London square. It lies between the junction of New Bond Street and Regent Street with Oxford Street. Laid out in 1718, and named in honour of George I, its notable residents have included the book-



Hanover Square. S. George's Church, built 1713-24, where many fashionable weddings have been solemnised

collecting duke of Roxburgh, at Harewood House, built for him by the brothers Adam; General Lord Cadogan; the earl of Harewood, whose residence became the home of the Royal Agricultural Society; Lord High Chancellor Cowper; Lord Palmerston, father of the prime minister; Augusta, duchess of Brunswick; Mrs. Jordan the actress; Talleyrand; Lords Anson and Rodney; and Thomas Campbell as guest of the 2nd earl of Minto.

Largely rebuilt, the square is now occupied by learned societies and business establishments. The Oriental Club, founded in 1824, is at No. 18. The once famous Hanover Rooms and the Hanover Square Club are no more. On the E. side is a statue of William Pitt by Chantrey, set up in 1831; and in George Street is the church of S. George's, Hanover Square, built 1713-24, which once had almost a monopoly of society weddings.

Hanriot. French aeroplane, named after its builder. A Hanriot biplane was among the most successful of the French aeroplanes of the latter period of the Great War.

Hansard. Official record of parliamentary proceedings. It was named after Luke Hansard (1752-1828), a Norwich compositor, who, as printer to the House of Commons, after 1803 continued Cobbett's Parliamentary History under the title of Hansard's Parliamentary Debates. These reports, issued by himself and his family down to

1889, were at first taken from the newspapers and revised by members. Following actions for libel by a bookseller named Stockdale, the reports were protected by the privileges of the House of Commons in 1840, but not till 1857 did the Treasury subsidise them.

In 1889 Hansard became a public company, and when this was wound up the work was done by contract, the reports from 1895 to 1908 being supplied by The Times staff. Then the State took control, and the Debates were reported by a government staff, of which Mr., afterwards Sir, James Dods Shaw (d. 1916) was first editor, with an assistant editor, twelve reporters, and five typists. The Speaker, assisted by the Debates Publication Committee, is the final authority in the event of complaints as to the reporting.

Hanseatic League or **HANSA.** Association for commercial purposes of the commercial towns of N. Germany in the later Middle Ages. When not only every country but every town regarded the presence of foreign traders as a necessary evil and the traders themselves as persons to whom no facilities should be conceded, no one could trade abroad without having at his back an association of which he was a member. Each trading town became a trading Association. While they retained their mutual jealousies, they gradually realized the advantages of combination for the purposes of trading in foreign lands, exacting concessions, and acting in concert against piracy. Such loose leagues were formed by the towns engaged in the Baltic trade and those engaged in the North Sea trade, there being several of them in the early part of the 13th century.

The first Hansa or Association which obtained concessions in England was that of the Merchants of Cologne, who gradually admitted the Hansas of other towns. In 1282 the German Hansa, which included Cologne, Hamburg, and Lübeck, was permanently established; this prepared the way for a more general combination into the Hanseatic League of the North German commercial towns. The league became so powerful that it was able to dominate the foreign trade of Norway, Sweden, Denmark, and even to some extent of London. The English commercial history of the 14th and 15th centuries is largely that of the efforts of the English Associations, the Merchants of the Staple, and the Merchant Adventurers, to restrict the privileges of the Hansa in England and to extort corre-

sponding privileges for themselves from the Hanseatic towns in Germany, and as rivals of the Hansa in other countries. Wisby, on Gotland, was one of its great centres.

The League even acquired a political domination in the Baltic; but at the end of the 15th century its power was waning; by the middle of the 16th century it had lost all its privileges in England; geographical discoveries and maritime developments had provided new pathways for commerce, and by the opening of the 17th century the league had ceased to be of great account. Its doom was finally sealed by the disintegration of Germany wrought by the Thirty Years' War. See Bremen; Germany; Guild; Hamburg; Lübeck.

Hansen, PETER ANDREAS (1795-1874). Danish astronomer. Born in Slesvig, Dec. 8, 1795, he became director of the Seeberg observatory near Gotha. Having turned his attention to lunar observation, his Tables de la Lune, 1857, were published by the British Government, who awarded the author £1,000. Foreign member of the Royal Society, and holder of the Copley medal, 1850, in 1842 and 1860 he received the gold medal of the Royal Astronomical Society. He died at Gotha, March 28, 1874. One of the most profound mathematical astronomers, his work has long formed the basis of many of the calculations employed in the preparations of The Nautical Almanac and similar works.

Hansi. Subdivision and town of the Punjab, India, in Hissar District. Area, 803 sq. m. Hansi town, one of the oldest places in N. India, contains cotton ginning and pressing factories. Pop. subdivision, 167,963, $\frac{4}{5}$ Hindus, $\frac{1}{5}$ Mahomedans; town, 14,576, equally Hindus and Mahomedans.

Hansom. Name given to a cab, an improved form of the cabriolet. It was invented by J. A. Hansom,



J. A. Hansom, Inventor of the cab

a Yorkshire architect, who in 1834 registered his "patent, safety cab," which was eventually named after him. Its chief feature was an arrangement for preventing its tipping forward if the horse fell, or backward, if over-balanced. It had two enormous wheels, with sunk axle-trees, and a seat for the driver at the side. Subsequent improvements reduced the size of the wheels, fixed the dickey at the back, and provided a pair of double

doors in front, with sliding glass folding panels, lowered from the roof by the driver; the hansom could thus be used open, half, or totally closed. See Cab; Taxicab.

Hanswurst. Name of the buffoon, the traditional clumsy, clownish fellow of the old German stage; equivalent to the English Jack Pudding. The sausages familiarly associated with the clown in the modern harlequinade may have their origin in Hanswurst, which means literally Jack Sausage.

Hanumān. Monkey god in Hindu tradition, worshipped as the type of a faithful servant. In the Ramayana (*q.v.*) he is described as helping Rama to rescue his wife Sita from Ceylon, whither she had been carried. Hanumān discovered her, and with his monkey forces helped to build the bridge by which Rama and his army crossed from the mainland to Ceylon.

Hanway, JONAS (1712-86). English traveller and philanthropist. Born at Portsmouth, Aug. 12, 1712,



Jonas Hanway,
English traveller

he was first in business at Lisbon and then at St. Petersburg, which latter city he left, in Sept. 1743, to sell woollen goods in Persia, returning, after many adventures, Jan. 1, 1745. In 1750 he returned to England and published an account of his travels in 1753. From 1762-83 he was a commissioner of the victualling office. He founded the Magdalen Hospital for women, and was the first man to use an umbrella in London. His violent attack on the habit of tea-drinking was answered by Dr. Johnson. He died Sept. 5, 1786. Hanway Street, London, is named after him.

Hanwell. Urban district of Middlesex. It has a station on the G.W. Rly., being 7 m. from the terminus at Paddington, while tramcars also run to Shepherd's Bush, Hammersmith, and elsewhere. The urban council provides a recreation ground and a public library. Water is supplied by the

Metropolitan water board, and gas and electricity by companies. Here is the large lunatic asylum of the London County Council, and cemeteries for Kensington and St. George's, Hanover Square. The chief church is St. Mary's. The Brent flows by here on its way to the Thames, and there is a canal. Hanwell includes the newer district of Elthorne. Pop. 19,200.

Hanworth. Parish and village of Middlesex, England. Situated N. of Kempton Park (*q.v.*), $1\frac{1}{2}$ m. N.E. of Sunbury and $1\frac{1}{2}$ m. S. of Feltham stations on the L. & S.W.R., it is on the King's or Cardinal's river, which was made by Wolsey for the supply of Hampton Court. The manor, owned in the 13th century by the Hamdens, was given by Henry VIII, who had a hunting lodge here, to Catherine Parr. Its later owners included Anne, duchess of Somerset, William Killigrew, Bradshaw the regicide, the Cottingtons, and the 5th duke of St. Albans, who cut down the trees in the park, which was once part of Hounslow Heath. Hanworth House was destroyed by fire, 1797, and replaced by a mansion $\frac{1}{2}$ m. N.E. of the old house. The Early English church of St. George replaced an earlier one. Pop. 2,200.

Hanyang. City of China, in Hupoh prov. It stands at the junction of the Han river with the Yangtze. It is a large industrial centre, with an arsenal and other engineering works, but it suffered during the revolution of 1911, being almost completely destroyed by the contending factions. Hanyang is the oldest of the Three Cities (*q.v.*). Pop. 100,000.

Haparanda. Town of Sweden, in the län or govt. of Norrbotten. It stands at the head of the Gulf of Bothnia, on the W. arm of the river Tornea, and is connected by a bridge with the town of Tornea, in Finland. It has shipbuilding yards and is an important meteorological station. Its sea-harbour is Salmis, 7 m. W. The Russo-Swedish Rly. runs through the town, which became an important centre of traffic to Russia during the Great War, owing to the Germans having mined the Baltic Sea. Pop. 1,442.

Hapsburg OR **HABSBURG.** Name of the family that ruled over the empire of Austria-Hungary until 1918. Members of the family were German kings and Holy Roman emperors from 1438 to 1806, and kings of Spain from 1516 to 1700.

The name Hapsburg or Habichtsburg, meaning hawk's castle, was taken in the 11th century from the family seat, a castle near the junction of the Aar with the Rhine. Counts and afterwards landgraves

in Alsace, one of them, Rudolph, made himself very useful to the emperor Frederick II.

Founders of the Family

The first great Hapsburg was another Rudolph, who, in 1273, was chosen German king. Wrestling Austria and Styria from the king of Bohemia and giving them to his own sons, he began the family's long connexion with Austria. Rudolph's son Albert became German king, although not immediately on his father's death, and for a short time his son, another Rudolph, was king of Bohemia. In 1314 another Hapsburg was chosen German king, but in 1322 he was dispossessed, and for about a century the family was perforce content with ruling Austria and its attendant duchies.

The usual frequent subdivision of their lands between the various members of the family occurred, but for one reason or another these partitions did not prove permanent, a fact which contributed to the rise of the house. In 1437 Albert of Hapsburg, who had married a daughter of the emperor Sigismund, inherited his father-in-law's kingdoms of Hungary and Bohemia. In 1438 he was chosen German king and thus became emperor. The two kingdoms were lost to the family when Albert's son Ladislaus died without sons in 1457, but Frederick, another member of the family, had already secured the German throne.

The Two Branches

Frederick was the strange monarch who dreamed of the future greatness of the Hapsburgs, but it was his son, Maximilian I, who translated these dreams into realities. He himself married Mary, daughter of Charles the Bold, duke of Burgundy, and his son Philip married the heiress of Castile and Aragon. In this way his grandson, Charles V, the greatest of the Hapsburgs, received a vast inheritance. His brother Ferdinand, by a marriage, secured the kingdoms of Hungary and Bohemia for the Hapsburgs, this time permanently until 1918. Henceforward there were two main branches of the Hapsburgs, the Austrian and the Spanish.

Meantime Charles V had been succeeded as emperor by his brother Ferdinand, whose line was more fortunate. One after another succeeded to the empire, elective now only in theory, and to the hereditary Austrian lands. Their hold on Bohemia was shaken by the Thirty Years' War and on Hungary by the advances of the Turks, but both dangers were repelled. Maximilian II succeeded Ferdinand, and after the brothers Rudolph and Matthias came



Hanway and his
umbrella

After an old print



Hara-kiri. Scene at the condemnation of a samurai to the suicide made obligatory by Japanese feudal custom
After a drawing from a Japanese print

Ferdinand III and Leopold I. With the death of Charles VI, however, the male line of the Hapsburgs came to an end in 1740.

The existing Hapsburgs are descended from Maria Theresa, the daughter of Charles VII, and her husband Francis of Lorraine—hence the family is sometimes known as Hapsburg-Lorraine. Two of their sons, Joseph II and Leopold II, succeeded to the imperial throne. A grandson, Francis II, was the last Holy Roman Emperor and the first to call himself emperor of Austria, while a succession of younger members of the family ruled over Tuscany, which Francis of Lorraine had brought to the common stock. About this time the family increased rapidly in numbers, and in the 19th century there was a bewildering number of archdukes. In 1859 the Hapsburgs lost Tuscany, but in Austria-Hungary Francis Joseph, in spite of several humiliations, was still emperor and king when he died in 1916. His grand-nephew Charles, however, lost all in 1918, and the various Hapsburgs became private personages. See Austria; Bohemia; Empire, Holy Roman; Europe; Hungary; consult also The Whirlpool of Europe; Austria-Hungary and The Hapsburgs, A. R. and E. Colquhoun, 1906; and The Cradle of the Hapsburgs, J. Gilbert-Smith, 1907; The Hapsburg Monarchy, H. W. Stead, 2nd ed. 1914.

Hapur. Subdivision and town of the United Provinces, India, in Meerut district. The cultivated area is large. Hapur town is a local trade centre. Area, 410 sq. m. Pop., subdivision, 251,668, $\frac{1}{4}$ Hindus, $\frac{1}{4}$ Mahomedans; town, 19,142, $\frac{2}{3}$ Hindus, $\frac{1}{3}$ Mahomedans.

Hara-kiri (Jap., belly-cut). Suicide by disembowelment in Japan. The custom originated as a means of honourable death among the medieval feudal nobles, and in the 14th century obligatory hara-kiri was recognized by the mikado as the privileged form of execution for a samurai convicted of disloyalty or breaking the law.

The ceremony consists in ripping up the stomach from left to right. Obligatory hara-kiri was abolished in 1868, but the voluntary form—committed from loyalty to a dead superior or as a protest against a

living one, or out of desperation—survived. A notable modern instance is that of General Nogi and his wife, through grief at their emperor's death. In the case of women the throat was cut. Among the Karens of Burma honourable suicide is committed by strangulation. Seppuku, the Japanese pronunciation of the Chinese synonym *chi'eh fuh*, is regarded as the more elegant term for this method of "happy dispatch."

Harbin OR KHARBIN. Town of Manchuria, China, in the prov. of Kirin. It stands on the Sungari river, 325 m. N.E. of Mukden. Here the Trans-Siberian, or that section known as the Chinese Eastern Rly., branches S. to Mukden and thence to Peking, to Dairen and Korea, while the main line continues to Vladivostok. Harbin was opened to foreign trade in 1909. The international settlement is administered by a municipal council. Harbin promises to become the centre of Eastern Siberian trade. The Japanese intend to link it up with the coast town of Possiet. Pop. 28,600.

Harborne. Suburb of Birmingham. It is to the S.W. of the city proper, beyond Edgbaston. It is served by the L. & N.W. Rly., and also by motor omnibuses. There are a number of industries here, but it is mainly a residential area, the houses and roads having been laid out in a spacious manner. See Birmingham.

HARBOURS: NATURAL AND ARTIFICIAL

P. J. Risdon, Consulting Engineer

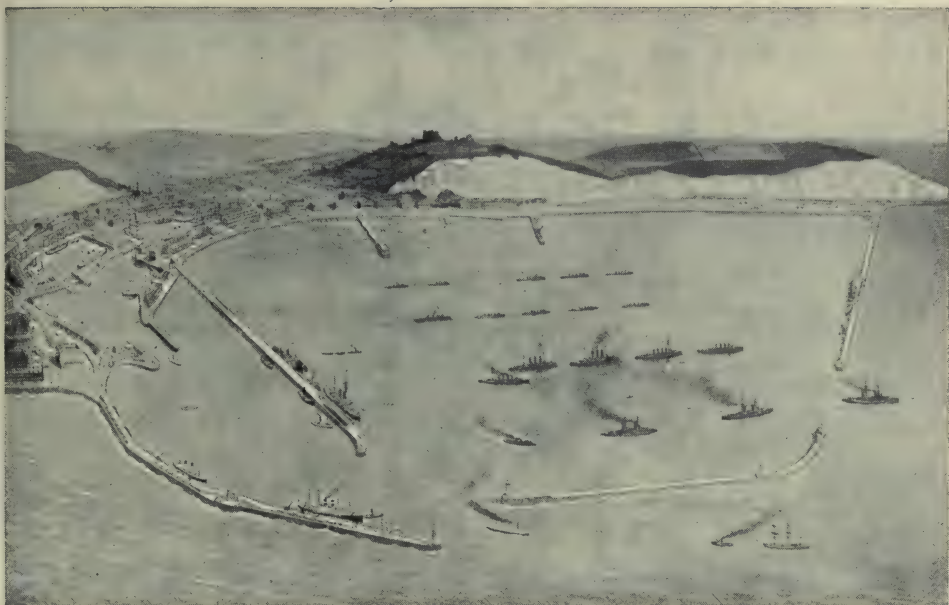
This article describes generally the varieties of harbours and the way in which they are constructed and protected. See the articles on the great ports of the world: Hamburg; Liverpool; London; Portsmouth; Rio de Janeiro; New York, etc.; also Concrete; Engineering. See also River; Tides

A harbour is a water area partially enclosed and so protected from storms as to provide safe accommodation for shipping. Other essential features of a good harbour are a sufficient area and depth of water for the number and size of the vessels to be accommodated, and safe and easy access to and from the open sea in any weather. Harbours may be classed (a) as natural or artificial harbours, or (b) as harbours of refuge or commercial harbours.

A natural harbour is an inlet or arm of the sea protected from storms by the natural configuration of the coast, and with an entrance so formed and located as to facilitate navigation whilst ensuring comparative tranquillity within. Notable instances of natural harbours are Milford Haven, a well-sheltered creek about 10 m.

long, with excellent access and a minimum depth of water of 48 ft.; and Rio de Janeiro, which possesses one of the finest natural harbours in the world. The mouths of the Thames, Mersey, Humber, Firth of Forth, Potomac, and St. Lawrence may be said to constitute natural harbours, although protection is not always so complete as in harbours with narrow entrances, while bars and sandbanks sometimes form obstructions, rendering constant dredging necessary.

An artificial harbour is one which is protected from the effect of sea waves by means of breakwaters. Early instances of artificial harbours are those of Tyre and Sidon and Carthage. The selection of site is influenced by (1) the range of tide and depth of water; (2) the nature of the approach, which should be of sufficient width



Harbour. Perspective plan showing arrangement of Dover Harbour as it was before the great War. The larger basin is the Admiralty harbour, completed in 1909; on the left is the Commercial harbour, leading to the tidal basin and docks

and depth, and face in the right direction in regard to tidal currents and prevailing storms to permit of the safe navigation of ships entering the harbour in the worst weather; (3) local conditions, which must allow of the construction of the necessary breakwaters.

In practice the necessity for a harbour in a given locality usually overrides other considerations, but localities where progressive silting occurs should be avoided. Full knowledge of all such local conditions as tidal range and currents, prevailing winds and waves, coast erosion and silting, and the effect of artificial obstructions is essential in order to avoid unsatisfactory results. *e.g.* the construction of breakwaters without due regard to currents may cause silting on an extensive scale. The position and width of opening are also important; the position is determined by the direction of prevailing storms; the width is made as narrow as possible to prevent the entry of heavy seas, but must be sufficient for the safe passage of vessels during the heaviest gales. Again, it must be proportioned to the width of the harbour itself, so that waves entering the enclosed space may have ample room in which to expand.

Sometimes an outer breakwater is constructed upon which the main force of the waves is expended. This forms an outer silting basin, which may also

serve as a refuge, while the basin within the inner breakwaters or moles constitutes a commercial harbour. In such cases the distance between the openings in the outer and inner breakwaters should be sufficient to allow sailing ships, running before the wind, to shorten sail after passing the outer breakwater and make the inner entrance in safety.

Harbours of Refuge

A harbour of refuge may be either natural or artificial, and may be used solely as a refuge for ships in a storm, or may also constitute a commercial harbour. The essential features are good anchorage and safe and easy access from the sea at any state of the tide and in any weather. The best known harbours of refuge are the one at Sandy Bay, near Cape Ann, on the coast of Massachusetts, and that at the mouth of Delaware Bay, U.S.A. The breakwater of the former is over 9,000 ft. long, 72 ft. in height, and 205 ft. wide at the base. Both are rubble mound constructions capped with stone.

A commercial harbour may be either a natural or artificial harbour within which docks, quays, wharves, and piers are constructed and equipped with the necessary appliances for the loading and discharge of cargoes. Sometimes the inner side of a breakwater is constructed as a quay or wharf alongside which ships may berth. Dry docks are also sometimes pro-

vided. Owing to the presence of a bar or sandbanks, or the difficulty of maintaining a sufficient depth of water in the approach channel at low tide, or to other local conditions, many harbours can only be entered and left at high tide.

In the early period of commercial enterprise, sites for harbours were frequently selected which afforded natural shelter, and were readily accessible to the small ships then in use. Small rivers and creeks fulfilled the requirements of those days, and led to the establishment of ports inadequate for the accommodation of the bigger vessels built later. The channel was maintained by the discharge of land water or tidal flow, and to deepen it for the passage of ships of greater draught, training jetties were in many instances constructed along each bank, projecting seawards beyond the original entrance, for the purpose of concentrating the flow of water and scouring the channel.

Whilst this purpose was served, these projecting jetties often acted as groynes on the fore-shore, checking the travel of shingle and sand, and eventually causing a reduction in depth of the channel at the outer end by the formation of a bar. This led to the periodical extension of the jetties seawards until a great length was sometimes attained, as in the case of Dunkirk. This method of improvement can, therefore, only

be regarded as a temporary measure, since in its execution the engineer combats a persistent force of nature, which in the end generally prevails.

An alternative method is to make use of river or other land water for scouring the channels, or where this is not available in sufficient quantity, to construct sluicing basins, i.e. reservoirs with sluice gates, in the vicinity of the channel, in which sea water is impounded at high or spring tide. At low tide the sluices are opened and a volume of water sweeping down the channel scours out the silted material. The jetties are sometimes made to converge towards the outlet so as to concentrate the scouring effect at the entrance where a bar tends to form. This method has been greatly favoured at Belgian and French ports, and in many other localities where silting occurs on an extensive scale. In some cases, where waves of considerable force enter a jetty channel, the channel is widened for a short distance, the jetty is made of open construction for a portion of its length, and a basin with a shelving beach is constructed. By this means the waves passing up the channel find an outlet, and, expanding into the basin, spend their force upon the beach. Such an arrangement is known as a wave breaker.

Semi-natural Harbours

Next to a purely natural harbour, an inlet or creek sheltered on two sides by headlands, and only requiring artificial protection at the entrance, forms the most desirable harbour site, other conditions being equal. At Plymouth and Cherbourg, for example, this natural advantage exists, the entrances being protected by detached breakwaters. Such conditions are only to be expected on more or less rocky coasts.

Varieties of the principal types of harbour are numerous, depending upon local requirements and conditions as well as upon financial considerations and limitations. A portion of a large bay may be converted into a harbour by a detached breakwater more or less parallel with the coast and one or two mole breakwaters projecting from the shore, or a harbour may be formed by two mole breakwaters with outer ends converging or by a single mole breakwater.

A fine example of a combined harbour of refuge and commercial harbour, the second largest purely artificial harbour in the world, exists at Dover, of which the leading features are as follows: Low water area of Admiralty

(refuge) basin, 610 acres; commercial basin, 80 acres; length of Admiralty mole breakwater, 4,000 ft.; E. mole breakwater, 2,942 ft.; S. (detached) breakwater, 4,212 ft.; total length of breakwater, 2.1 m., of which about 1.75 m. measures 100 ft. high from foundation to the top of the parapets and 60 ft. across the base, and consists of solid concrete and granite.

The inner faces of the east arm and Admiralty mole extension are fendered, and, in addition to the Prince of Wales's pier, 2,910 ft. long, dividing the Admiralty and commercial basins, provide berthing accommodation for shipping. The deck level of all the breakwaters is 10 ft. above high (spring) tide, the E. arm and Admiralty mole extension being provided with additional high sheltering parapets. There are two entrances, one facing E. and the other S., the width being 650 ft. and 740 ft. respectively, and the depth 40 ft. at low tide. The tidal range is 18 ft. 9 in., and very strong currents occur on this part of the coast, and it is estimated that with every tide 17,000,000 tons of water enter and leave the harbour, of which half enters or leaves in two hours.

These facts influenced the decision to provide two entrances. The extension works, complete in 1909, occupied twelve years to construct, cost £4,000,000, and comprised 1,300,000 cubic yds. of concrete and 1,900,000 cubic ft. of granite. Concrete blocks, weighing from 26 to 40 tons each, were employed in the construction of the breakwaters.

Buenos Aires Harbour

An interesting type of a commercial harbour is exemplified in the port extension works at Buenos Aires. The scheme embraces four parallel tidal basins from 385 to 643 yds. long by 154 yds. wide, formed by intervening and end moles of the same lengths, the whole being protected by a detached breakwater of the rubble mound type, 1½ m. long, beginning near the existing dock approach channel and spaced at a distance of 275 yds. from the outer ends of the moles. Within the line of the breakwater gantry stagings were built out from the shore by means of which temporary dams were formed, enclosing the whole area of the new port works. Water was then pumped out of the enclosed space, and the construction of the moles and basins commenced in the dry.

The moles vary from 137 yds. to 222 yds. in width, and consist of retaining walls with earth filling. A depth of 33 ft. at low water is provided for. The temporary dams

are arranged in sections, so that as each basin with its corresponding moles is completed, it may be opened to traffic by admitting the water and removing a section without interfering with the remainder of the work.

A harbour may be provided with one or more entrances; at Plymouth and Cherbourg the detached breakwaters at the entrances permit of vessels entering at either end. In purely artificial harbours there is usually only one entrance, as the admission of waves through two openings is liable to reduce tranquillity of the water within, unless an outer breakwater and stilling basin are provided. On the other hand, two entrances allow ships the benefit of selection according to the direction of a storm, and are sometimes an advantage where littoral currents prevail. The width varies greatly according to local circumstances, ranging from 100 ft. to several thousand ft.; thus, where the entrance faces a comparatively sheltered position, it may be as wide as the harbour itself, but when it faces in the direction of prevailing storms it is made as narrow as is consistent with safe navigation.

Harbour Entrances

In exposed situations the width of the harbour itself influences the width of opening, since waves, after passing through the entrance, need ample width in which to expand. Again, a deep-water entrance in an exposed position should be narrower than one in shallow water, since deep waves passing through it are not so readily stilled as shallow waves. Outer and inner breakwaters are sometimes constructed to overlap, so that the openings do not come opposite each other. Ample room should be allowed between them to permit of a sailing ship tacking to make the inner opening after passing through the outer entrance.

Reefs and dangerous reefs in the vicinity of harbour works are sometimes removed or lowered by blasting. Extensive operations of this character, occupying many years and costing over a million pounds, were carried out to improve the East river at New York, an underwater area of some 12 acres of rock being lowered. The positions of sandbanks, bars, dangerous reefs, etc., near harbour entrances are marked by light-houses, or, where a light is not essential at night, by beacons. Large lantern lights are also provided on the ends of breakwaters to mark the entrance by night. Buoys are frequently employed to indicate varying depths of water

within a harbour, and for marking out an approach channel beyond the entrance.

A defended harbour is a place at which companies of Royal Garrison Artillery were stationed during the Great War.

Bibliography. The Theory, Formation, and Construction of British and Foreign Harbours, J. Rennie, 1854; Harbours and Docks, L. F. Vernon Harcourt, 1885; The Design and Construction of Harbours, T. Stevenson, 1886; Ports and Docks, D. Owen, 1904.

Harbour Grace. Port of entry and second town in importance of Newfoundland. It stands on Conception Bay and the Reid rly. It has a Roman Catholic cathedral, a court house, and a large but exposed harbour. Pop. 4,279.

Harbour Lights, THE. Nautical melodrama by George R. Sims and Henry Pettitt, produced at The Adelphi, Dec. 23, 1885, where it ran for 512 performances. The cast included William Terriss, as David Kingsley, the hero.

Harburg. Town of Germany, in the Prussian province of Hanover. It stands on the S. branch of the Elbe, 5 m. S. of Hamburg. Since the middle of the 19th century it has become a seaport and transit centre of increasing size and importance. It is connected with Hamburg by rly. and river, and is a rly. junction for Bremen and Cuxhaven. Its manufactures include jute and linseed oil. Engineering and shipbuilding are also carried on. Pop. 67,025.

Harcourt, LEWIS HARCOURT, VISCOUNT (1863-1922). British politician. He was born Feb. 1,



Viscount Harcourt,
British politician

1863, the elder son of Sir William Harcourt, and was educated at Eton. For many years he acted as private secretary to his father, and gained a wide knowledge of politics and politicians. In 1904 he entered the House of Commons for the Rossendale division of Lancashire, and in 1905 joined the Liberal ministry as first commissioner of works.

Later he entered the Cabinet, and from 1910-15 was colonial secretary, reverting to his former post when the Coalition Government was formed in 1915. He resigned with Asquith in 1916, and was made a viscount. This title had been held by earlier Harcourts, whose estate at Nuneham he inherited. He died Feb. 24, 1922.

Harcourt, SIMON HARCOURT, 1st VISCOUNT (c. 1662-1727). English lawyer.



Simon, Viscount
Harcourt,
English lawyer

The only son of Sir Philip Harcourt, he belonged to the family that, coming from Normandy, had made its home in Oxfordshire, where Stanton Harcourt commemorates the fact. Simon was born at the manor house there, and was educated at Pembroke College, Oxford. In 1690 he entered Parliament as M.P. for Abingdon, and in 1702 he became solicitor-general and a knight. In 1707-8, and again in 1710, he was attorney-general, and later in 1710 was made lord keeper of the great seal. In 1711 he was created a baron; in 1713 he became lord chancellor, but like other Tories, he lost his office when George I became king in 1714; in 1721 he was made a viscount. He died July 23, 1727. Swift referred to him as "trimming Harcourt."

Harcourt, the ancestor of the later Harcourts, bought Nuneham, which is still their seat. His son, Simon, predeceased his father, so the latter's heir was his grand-son, Simon (1714-77). He was viceroy of Ireland, 1772-77, having previously been governor to the prince of Wales, afterwards George III. In 1749 he was made an earl. His two sons succeeded in turn to the titles and estates. The younger of these, William, the 3rd earl (1743-1830), served in America and in Flanders, becoming a field marshal. When he died the titles became extinct.

Harcourt, SIR WILLIAM GEORGE GRANVILLE VENABLES VERNON (1827-1904). British statesman. The son and grandson of clergymen, his grandfather being Edward Harcourt, archbishop of York, he was born at York, Oct. 14, 1827. The archbishop was originally named Vernon, but took the name of Harcourt on succeeding to the estates of that family. Educated privately and at Trinity College, Cambridge, Harcourt was called to the bar. He was made Whewell professor of international law at Cambridge, and held this post until 1887.

By birth a Whig, Harcourt joined the Liberal party, and in 1868 entered the House of Commons as M.P. for Oxford city. He lost his seat in 1880 but was member for Derby 1880-95 when, being rejected there, he was re-

turned by W. Monmouthshire, retaining that seat until his death. He entered official life as solicitor-general under Gladstone in 1873, going into opposition in 1874. In 1880, when the Liberals came again into power, he was made home secretary. He had to deal with the Fenian outrages, and the Irish malcontents found in him one of their most vigorous assailants. In 1886 he was for a few months chancellor of the exchequer, having adhered to Gladstone when the party was split over Home Rule; and then followed six more years in opposition.

In 1892 Harcourt returned to the Exchequer, and in 1894 was responsible for the Budget which established the present graduated system of death duties. He succeeded Gladstone in 1894 as leader of the House of Commons, but not



J. P. MacCarthy

as prime minister, and this was undoubtedly a bitter disappointment to him. From 1895-98 he led the party in opposition, but the differences between him and many of his followers grew more pronounced, and he resigned in 1898. Henceforward he occupied a detached position, having little save hard words both for the Conservatives and for the imperialist section of the Liberals. He died Oct. 1, 1904, having only just inherited Nuneham Park and the estates of the Harcourts. He was twice married, and left two sons, Lewis and Robert, both Liberal politicians.

Harcourt was one of the foremost men of his day, touching life at many points. Endowed with an imposing presence and great mental gifts, he was a witty talker, a forcible debater, and a most acceptable platform speaker. His Life by A. G. Gardiner appeared in 1923. See British Political Leaders, J. MacCarthy, 1903.

Harda. Subdivision and town of the Central Provinces, India, in the district of Hoshangabad. It stands on the high road to Bombay and is a station on the Great Indian Peninsula Rly., 12 m. from Handia. It is a prosperous town with a good water supply, and a trade in cereals and oil seeds. Area of subdivision, 1,125 sq. m. Pop., subdivision, 129,915; town, 8,340.

Hardanger Fiord. Deep, ramified inlet on the W. coast of Norway. It opens S. of Bergen, and

burg, Kuno Moltke, and Wilhelm von Hohenhausen, which led to their disappearance from the imperial circle. He was several times prosecuted for *lèse-majesté*, and his paper was repeatedly suppressed during the Great War. He helped to found a free theatre in Berlin in 1889, and was the author of several books, of which two, *Word Portraits*, 1911, and *Monarchs and Men*, 1912, appeared in English.

Hardenberg, FRIEDRICH LUDWIG VON (1772-1801) German poet and romance writer, better known by his pseudonym of Novas (q.v.).

Hardenberg, KARL AUGUST, PRINCE VON (1750-1822). German statesman. Born in Hanover May 31, 1750, he was educated at Leipzig and Göttingen, afterwards entering the public service of Hanover. He was made a

count, but left the service because of his wife's intimacy with the prince of Wales, afterwards George IV, the Hardenbergs being then in England. In 1782 he entered the service of the duke of Brunswick, and in 1792 was made administrator of Ansbach and Baireuth.

Hardenberg was soon busy for Prussia. On the outbreak of war against France he had been sent out on diplomatic work. He helped to arrange the peace of Basel (1795), after which he held an important post in Berlin. In 1804 he was made foreign secretary by Frederick William III, but in 1805 Napoleon insisted upon his retirement. He returned to his post in 1807, but again the dictator had him dismissed. In 1810 he became chancellor, and as such had a great deal to do with the reorganization of Prussia. He supported heartily the policy of making war on France in 1812, and had a share in arranging the settlement of 1814-15, being Prussia's chief representative at the congress of Vienna. He was also a member of all the congresses that took place between 1812 and 1822, but was merely a puppet in the hands of Metternich. He died at Genoa, No. 26 1822.

Harderwyk. Town and port of Holland. Situated in the province of Gelderland, about 46 m. due E. of Amsterdam, it has a small harbour on the Zuider Zee, and is on the rly. between Amersfoort and Zwolle. The port is now used

only for coastal traffic, but the town is a useful agricultural centre. There is a depot for recruits for the Dutch East Indian service. Harderwyk University, founded 1648 and well known in the 18th century, was closed in 1811. Pop. 8,000.

Hard Fern (*Blechnum spicant*). Fern of the natural order Polypodiaceae. It is a native of Europe N.E. Asia, the Canaries, and N.W. America. The rootstock is creeping and scaly; fronds are leathery, polished, long and narrow, and deeply cut in from the margins to, or nearly to, the midrib. Fertile fronds have the divisions narrower and more distant; the barren fronds are broader, evergreen, more or less prostrate. The fertile fronds are twice the length of the others, erect, the under side of each lobe margined with the line of brown spore-cases. See Fern.

Hardhead, MATELLON OR **GREATER KNAFWEED** (*Centaurea scabiosa*). Perennial herb of the natural order Compositae. It is a native of Europe and W. Asia. The long leaves are deeply cut into boldly toothed segments. The grooved flowering stem is 2 ft. or 3 ft. long covered with soft hairs, branched near the top, each branch ending in a large bright purple (occasionally white) flower-head. The lower part of the head is almost spherical, invested with large rough scales with brown tips.

Hardicanute OR **HARTHACNUT** (c. 1018-42). King of Denmark and England. The son of King Canute and his Norman wife, Emma, the widow of Ethelred the Unready, he passed most of his time in Denmark, where he acted as his father's deputy. In 1035 Canute died and he became king of Denmark, while Earl Godwin wished him to be king of England also. A contest between him and his half-brother Harold resulted in division of the kingdom between them, Hardicanute taking the southern, or English, part.

Hardicanute however, stayed in Denmark, seeking among other things the throne of Norway, and in 1039 his discontented English subjects placed themselves under Harold. When Harold died, he was chosen king. He then came to England, but his short reign was marked by brutalities, notably the



Hardanger Fiord. Landing-place at Stadfjord, at the head of the Hardanger Fiord

extends in a N.E. direction about 70 m. to Vik and Ulvik, which are about 115 m. from the open sea beyond the islands at its mouth. A branch, known as the Sörfjord, runs S. to Odde, passing the vast Folgetond snowfield. Among the many cataracts on the Hardanger Fiord are the Skjeggedalsfos and the Vöringfos.

Hardecourt. Village of France, in the dept. of Somme. It is 2 m. S.W. of Combles, and was prominent in the Great War. It was stormed by the Allies on July 8, 1916, and this operation completed the first phase of the French operations north of the Somme. Recaptured by the Germans in March, 1918 it was finally taken by the Allies on Aug. 28, 1918. See Somme. Battles of the

Harden, MAXIMILIAN FELIX ERNST (b. 1861). German journalist and politician. Born at Berlin Oct. 20, 1861, his real name was Witkowski; he became known as a satirical writer under the pseudonym of Apostata, and won the support of Bismarck and Caprivi. In



Maximilian Harden, German journalist

Oct., 1892, he founded the weekly paper *Die Zukunft* (The Future), in which, in 1907, he launched a campaign against Philip zu Eulen-



Hardhead, leaves and flower-heads

ravaging of Worcestershire, and by a short quarrel with Earl Godwin. He died, says the A.S. Chronicle, as he stood at drink, June 9, 1042.

Hardie, JAMES KEIR (1856-1915). British labour leader. Born in Scotland, Aug. 15, 1856, he worked in the mines from the age of seven until his 24th year, when he was elected secretary to the Lanarkshire Miners' Union. From 1882-86 he was editor of The Cumnock News, and in 1888 unsuccessfully contested Mid Lanark. An advocate of an independent labour party, he became one of the founders and the chairman of the I.L.P., 1893. Labour M.P. for West Ham, 1892-95, and for Merthyr Tydvil, from 1900 till his death, he started and edited The Labour Leader. He died Sept. 26, 1915.



J. Keir Hardie,
Labour leader
Russell

Harding, JAMES DUFFIELD (1798-1863). English painter. Born at Deptford, he studied under



James D. Harding,
English painter

Paul Sandby and Samuel Prout. He was elected associate of the Old Water Colour Society in 1820 and member in 1821. His sketches were facile but a little superficial; he was the first to use papers of various tints. One may cite his Falls of Schaffhausen, 1855, View of Fribourg, 1855, and the Picturesque Selections, 1861. He died at Barnes, Dec. 4, 1863.

Harding WARREN GAMALIEL (1865-1923). American president. Born Nov. 2, 1865, in a farmhouse near the village of Blooming Grove, in Morrow co., Ohio, the son of George T. Harding, a doctor, he was educated in the school of his village and at a college at Caledonia in his native state. Having been a schoolmaster for two years he started work in the printer's shop at Blooming Grove, and in 1884 with the help of his father acquired The Marion Star, the local newspaper of the village in which his family settled in the early 'eighties. From 1899-1903 he represented Marion in the senate of Ohio, and from 1904-6 was lieutenant-governor of the state.

In 1912 he nominated W. H. Taft, and followed him when Roosevelt split the Republican party. In

1914 he was elected to the senate of Washington, where he was member of the foreign relations committee. In 1916 Harding made the keynote speech of the convention which nominated C. E. Hughes for the presidency.

Before the Great War he paid three long visits to Europe and studied fiscal and labour questions. In its early stages he came out openly against President Wilson's refusal to take steps to meet the spread of the European conflagration across the Atlantic, and backed Roosevelt in trying to arouse the president to a sense of impending emergencies. When the U.S.A. entered the war he favoured Roosevelt's plan for sending a volunteer division to France without delay.



Warren Gamaliel Harding,
President of the U.S.A.

Harding was unanimously nominated in June, 1920, as the Republican candidate for the presidency at the Chicago convention. He was a compromise candidate after the failure of both the conservative and the radical wings of the party to get their nominees accepted. He was elected president on Nov. 2, 1920, by 16,181,289 votes to 9,141,750 cast for Governor Cox, his Democratic opponent, carrying 37 out of 48 states and the entire country outside the traditionally Democratic south.

Harding's sweeping victory showed the national disgust with the personal domination of the president, so marked a feature of the Wilson regime, and the general desire of the country to concentrate its energies on American affairs. He spent part of the four months before he took office in consulting what he termed the best minds among the Republican party, and at Marion he held a series of conferences on questions of the day with experienced politicians, financiers, and men of affairs. His first speeches showed that he believed in an effective protective tariff and the free use

of the Panama canal by American shipping; also that the United States, with its vast natural resources, had a great part to play in the world. Consequently, though elected on a platform which repudiated the League of Nations as established by the treaty of Versailles, he tried to bring about some new association in which America should play a part. He died Aug. 2, 1923.

Hardinge, HENRY HARDINGE, 1st Viscount (1785-1856). British soldier and administrator. Of an old Kentish family, he was born at Wrotham, March 30, 1785, and educated at Eton. Having entered the army, he served in the Peninsular War, and in 1815 was with the Prussian army at Ligny, where he was wounded. In 1820 Sir Henry entered Parliament as M.P. for Durham, and in 1828 he became secretary at war under Wellington; in 1830 he was chief secretary for Ireland, as he was again in the Tory ministry of 1834-35. From 1841-44 he was again secretary at war, resigning to become governor-general of India. He was there until 1852, carrying through the wars against the Sikhs and being rewarded in 1846 with a viscounty. From 1852 to 1856 he was commander-in-chief. He died Sept. 24, 1856, and his title is still held by his descendants. See Sikh Wars; consult also Viscount Hardinge, C. Hardinge, 1891.



After E. U. Eddis

Hardinge, CHARLES HARDINGE, 1st Baron (b. 1858). British diplomatist. Born June 20, 1858, a



Baron Hardinge,
British diplomatist
Russell

younger son of the 2nd Viscount Hardinge, he was educated at Harrow and Trinity College, Cambridge. In 1880 he entered the diplomatic service, and gained experience in several capitals, especially St. Petersburg, 1898-1903. After being assistant under-secretary for foreign affairs, he went to St. Petersburg as ambassador in 1904, returning to London in 1906 to become under-secretary at the foreign office.

In 1910 he was appointed viceroy of India, being raised to the

peerage as Viscount Hardinge of Penshurst. In 1916 Hardinge left India and was again made under-secretary for foreign affairs in spite of the censure passed upon him by the Mesopotamia commission. He was made a K.G. and in 1920-22 was ambassador to France.

Hardinge Bridge. Railway bridge across the Ganges, India. It spans the river at Sara and was opened in 1917. A marvellous feat of engineering, it connects the standard 5 ft. 6 in. gauge system of the E. Bengal Rly., S. of the Ganges, with the metre gauge system N. of the river. It comprises 15 girder spans of 345 ft. $1\frac{1}{2}$ ins. with 3 land spans of 75 ft. at each end.

Hardingstone. Village and parish of Northamptonshire. It is 2 m. from Northampton and is famous for its cross, the best preserved of those erected by Edward I to the memory of his wife Eleanor. There is an old church dedicated to S. Edmund, and the Nen runs through the parish, as does the Grand Junction Canal. The battle of Northampton, at which in 1459 Henry VI was defeated and taken prisoner, was fought on Hardingstone Fields. There are remains of a Roman camp. See Northampton, Battle of.

Hard Labour. Term used in penology for a particular kind of punishment. Ordinary prisoners are sentenced to imprisonment with or without hard labour, and Acts of Parliament lay down the various offences for which hard labour may be imposed. The maximum sentence is two years, and is seldom passed except for offences as robbery with violence. Prisoners who are sentenced to hard labour usually pass the first 28 days of their confinement breaking stone, making heavy coal sacks, and picking oakum, and afterwards on the manufacture of post bags, hammocks, etc. If certified fit by the doctor, for the first 14 days of hard labour the prisoner sleeps without a mattress. See Criminology; Penal Servitude.

Hardness. Term used for a certain quality in water. According to the action of water on soap it is stated to be hard or soft. If an insoluble curd is formed the water is "hard," but when a lather is readily formed the water is known as "soft." Hardness is due to calcium and magnesium salts dissolved in the water. Temporary hardness is due to calcium and magnesium bicarbonates, which boiling removes by converting them into insoluble carbonates which are deposited on the surface of the vessel. This deposit in kettles and boilers is known as fur and is

objectionable on account of the loss of heat that it occasions.

Permanent hardness is due to calcium and magnesium sulphates and chlorides remaining in the water after boiling. It cannot be stated definitely that hard water is injurious for drinking purposes, but for domestic purposes a great waste of soap takes place. Hardness is objectionable in water used for steam boilers and also in many industrial processes. On the other hand, water containing calcium sulphate is required for brewing pale ale.

Water is tested for hardness by Clark's soap test, which consists in ascertaining the amount of soap which has to be destroyed by a given volume of the water before a lather is obtained. The softening of water is effected on a large scale at water works by the addition of slaked lime, which, reacting with the calcium bicarbonate, produces calcium carbonate and is deposited as a sediment.

Hardoi. District, subdivision, and town of the United Provinces, India. The surface is fairly level, and is watered by the Ganges, Gamti, Ramganga, Gavia, and other streams, while several lakes are scattered throughout the district. Dense jungle prevails in parts, inhabited by large game, but the tiger is almost extinct. The chief products are rice and wheat. Area, district, 2,232 sq. m.; subdivision, 635 sq. m. Pop., district, 1,121,250; subdivision, 301,700; town, 13,855.

Hardouin, JEAN (1646-1729). French scholar. He was born at Quimper, became a Jesuit, and in 1683 was appointed librarian at the Collège de Louis le Grand, Paris. He maintained that most of the classic literature of Greece and Rome was the invention of 13th century monks. The exceptions which he admitted were Homer's Iliad, Herodotus, Virgil's Georgics, Pliny's Natural History, the Satires and Epistles of Horace, and the works of Cicero. In the same way he dismissed all ancient works of art as spurious, and held similar heterodox views as to the Septuagint, the Greek text of the New Testament, and the authenticity of all councils of the Church earlier than that of Trent.

Hardstoft. Village of Derbyshire, England, 6 m. N.W. of Mansfield. It was selected by experts as the place where the first boring for oil should be made in England. Work was begun in Oct., 1918, and in the following May oil was found. The supply was steady, yielding by the end of 1920 4,575 barrels, or 590 tons. The nearest railway is the G.C.R.

Hardt. Mt. range of Bavaria, Germany. In the Bavarian Palatinate, it is a continuation of the Vosges and runs parallel to the Rhine through the Palatinate. The highest summit is Kalmit, 2,250 ft. The upper parts are mainly covered with trees, while the vine is grown on the lower. The E. side, which slopes down to the Rhine, is very picturesque with charming valleys, and ruined castles on its heights.

Hard Times. Charles Dickens's ninth and shortest novel. Published in Household Words (April-Aug., 1854), it is a satire on the utilitarian philosophy of early Victorian days, bears unmistakable evidence of Carlylean influence, was approved as to its main drift and purpose by Ruskin, and dismissed by Macaulay as "sullen Socialism."

Hardwar. Town of the United Provinces, India, in Saharanpur District. It stands on the Ganges and is a place of great antiquity. It is one of the holy places of India, and the centre of a great pilgrim traffic. Pop. 28,680.

Hardware. Term used for ware made of the cheaper metals, e.g. iron, zinc, etc., especially kitchen utensils, tools, and the like. In England hardware is manufactured mainly in the Birmingham district. The trade has its own trade papers and trade organizations, the former including Hardware and Machinery, and The Hardware Trade Journal.

Hardwicke, EARL OF. British title borne since 1754 by the family of Yorke. It was given to the lord chancellor Philip Yorke, his son Philip (1720-95) being the second earl. He was for some years an M.P., was a contributor to Athenian Letters, having also scientific interests. A nephew, Philip (1757-1834), who became the 3rd earl, was lord-lieutenant of Ireland, 1801-6. He, too, was succeeded by a nephew, Charles Philip, the 4th earl (1799-1873), also a descendant of Charles Yorke, the lord chancellor. He served in the navy and sat in the House of Commons before becoming a member of the Tory cabinet of 1852. In 1858 he was lord privy seal, also under Lord Derby. The title passed to his son and other descendants, coming in 1909 to Charles Alexander, the 8th earl. The earl's eldest son is known as Viscount Royston.

Hardwicke, PHILIP YORKE, 1ST EARL OF (1690-1764). British lawyer. Born at Dover, Dec. 1, 1690, his father, also Philip Yorke, was a lawyer there. He began life, after education at a private school in London, in an attorney's office, but

he soon turned to the other branch of the profession, and after serving as a tutor to the sons of the earl of



1st Earl of Hardwicke, soon had a British lawyer good practice.

In 1719 he was chosen M.P. for Lewes, and in 1720 he became solicitor-general, and a knight. In 1723 he was promoted attorney-general.

In 1733 Yorke was made lord chief justice and created a peer, and in 1737 lord chancellor. There he remained until 1756, and during these years he was one of the most influential men in the country. As head of the council of regency in 1745, he had to deal with the crisis caused by the Jacobite rising, and after it was over he showed himself merciless to the rebels. He carried the measure abolishing the hereditary jurisdiction in the Highlands, but his name is more closely associated with the Marriage Act of 1753. In 1754 he was made an earl.

Hardwicke resigned the lord chancellorship in Nov., 1756, but in 1757 returned to the cabinet, although without a definite post. He remained there until May, 1762, and until his death, March 6, 1764, was one of the leaders of his party in its opposition to the ministry of Bute. His eldest son succeeded to his titles; another son, Charles Yorke, became lord chancellor; others were Joseph Yorke, created Lord Dover, and James Yorke, bishop of Ely. Hardwicke's fame rests upon his work as a judge. To him, more perhaps than to anyone else, are due the lines upon which English equity has developed.

Hardwicke Society. Legal debating society established about 1835 and named after Lord Chancellor Hardwicke. Its meeting-places have included Peele's Coffee House, Fetter Lane (now a tavern), Anderson's Hotel, the Portugal and Dicks's hotels (now no more), and the Temple. Originally formed for the discussion of legal subjects, the society now concerns itself mainly with political subjects. Its present home is the Middle Temple Common Room. Only bar students and barristers are admitted.

Hardwick Hall. Seat of the duke of Devonshire. It is 6 m. from Chesterfield, in Derbyshire. Built by Elizabeth, countess of Shrewsbury, between 1590 and



Hardwick Hall. Derbyshire seat of the Duke of Devonshire seen from the south-west

1597, it is remarkable for the number and size of its glass windows, and it contains some fine pictures and tapestries. It has been altered very little and is a fine example of an Elizabethan mansion. Notable features are the picture gallery and the chapel. There was an earlier hall here in which Mary Queen of Scots lived when a prisoner.

The nearest station is Rowthorn, 1 m. away. Near is Ault Hucknall, its little church containing the tomb of Thomas Hobbes.

Hardwood. Term used for a timber that is heavy and close-grained and therefore strong. The opposite term is soft wood. In forestry the term is used for the wood of a broad-leaved tree, such as the beech, in opposition to that of a coniferous tree; this is irrespective of the strength of the timber. See Forestry; Timber.

Hardy, ALEXANDRE (c. 1560-c. 1631). French dramatist. He was born in Paris, but little is known of his life beyond the fact that for some time he travelled with a band of strolling players, for whom he

wrote pieces, and later was attached in a similar capacity to the Théâtre de l'Hôtel d'Argent, Paris. He was one of the most prolific dramatists of history, producing some 600 plays, of which 41 are extant. Among these are *Scéadase*, 1604; *Alphée*, a pastoral, 1606; *La Mort d'Achille*, 1607; and the two best,

Marianne, 1610, and *Frédégonde*, 1621. Although now little read, Hardy was important historically as the first to give life and movement to the classic drama.

Hardy, DUDLEY (1867-1922). British artist and illustrator. Born at Sheffield, Jan. 15, 1867, he was

the eldest son of T. B. Hardy, the marine painter. He studied at Düsseldorf, Antwerp, and Paris, and had much to do with the exhibitions of the Royal Society of British Artists, the Royal Institute of Water Colour Painters, and other London exhibitions. To

the general public he was better known as an illustrator in *The Sketch*, *Graphic*, *Punch*, *Sphere*, and kindred periodicals, and by his work in books and poster work. Hardy died Aug. 11, 1922.



D. Hardy
Elliot & Fry

THOMAS HARDY: NOVELIST AND POET

George Sampson, M.A., Author and Critic

The articles English Language and Literature and Novel may be consulted in connexion with the following. See also Bournemouth; Dorchester; Dorset; and biographies of Kipling, Meredith, and other contemporaries of Hardy

Thomas Hardy, novelist, poet, and dramatist, was born at Upper Bockhampton, near Dorchester, June 2, 1840. From local schools he passed to King's College, London. During 1856-61 he was the pupil of an ecclesiastical architect, and from 1862-67 he worked at Gothic architecture, under Sir A. Blomfield. It is not fanciful to trace the influence of this training in the ordering of his literary work.

He drew and measured many old country churches, since pulled down or destroyed by "restoration," and was a prizeman of the Royal Institution of British Architects, and of the Architectural As-

sociation. Meanwhile he read Latin and Greek with a fellow pupil, and wrote a great deal of verse, during 1860-68. Some of this has been published, some transposed into prose and embedded in the novels.

His first known appearance in print was with an article, *How I Built Myself a House*, in Chambers's Journal for March 18, 1865. In 1871 appeared his first novel, *Desperate Remedies*, followed in 1872 by *Under the Greenwood Tree*. His last full-length story, *The Well-Beloved*, appeared in 1897. His work, while various in scope and positive value, has a

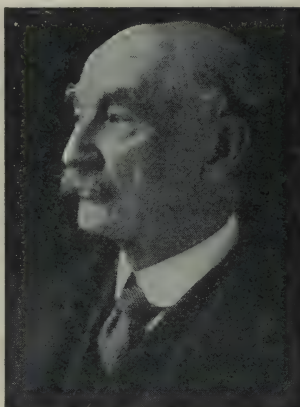
remarkable homogeneity, due partly to the literary patriotism, or "localism," that confines his scenes and persons to the limits of a province, but most of all to the character of a writer strong and unglamoured in his view of man and the universe, fearless and unflinching in his artistic sincerity.

What distinguishes him definitely from the purely Victorian writers is his complete abjuration of the popular sentimental attitude towards love, life, and religion, and his almost pagan sense of fate. The difference can be seen by a comparison of the two dairymaids, Hetty Sorrel, in *Adam Bede*, and Tess in *Tess of the D'Urbervilles*. Hardy seems to see human life as something almost pitifully transient against the eternal impassivity of nature. Thus, in *The Return of the Native*, 1878, the most powerful creation is not a person, but a place, Egdon Heath, grim, sinister, and almost malignant in its immemorial indifference to the life that flutters briefly on its ancient bosom.

Hardy's artistic geography must not be taken too literally. It is not for nothing that he reverts to the ancient name Wessex, calls Dorchester Casterbridge, Oxford Christminster, and so forth. He is often treated as the exploiter of a province; but his Wessex is a creation rather than a transcript.

Hardy's output of work was very regular—seventeen long novels or collections of stories in twenty-six years, all at a very high level of imaginative and technical excellence. Every reader will have preferences; but general agreement would group together *Tess of the D'Urbervilles*, *Jude the Obscure*, *The Mayor of Casterbridge*, *The Return of the Native*, *The Woodlanders*, and *Far from the Madding Crowd*, as superior to *Desperate Remedies*, *A Pair of Blue Eyes*, *The Hand of Ethelberta*, and *A Laodicean*. Never overlooked, Hardy became most famous when *Tess of the D'Urbervilles*, with its challenge to the conventions of respectability, appeared in 1891, and something like a storm burst when the grim and dreadful picture of sordid existence, called *Jude the Obscure*, followed a few years later. *The Well-Beloved* (1897), a puzzling fantasy, seemed to indicate a loss of power.

The unwavering views of Hardy's novels find their parallel in the poems. Verse was his earliest literary activity and his latest. What followed *The Well-Beloved* was not another novel, but *Wessex Poems* (1898), including some dating from his activity in



Thomas Hardy.

Russell

the 'sixties. Four other volumes of verse, *Poems of the Past and the Present*, *Time's Laughing-Stocks*, *Satires of Circumstance*, and *Moments of Vision*, succeeded.

The poems exhibit the homogeneity of the stories. Many of them, the poet is careful to tell us, are

Abbots Cernel, *Cerne Abbas*; *Ald-
brichham*, *Reading*; *Alfredston*, *Wan-
tage*; *Anglebury*, *Wareham*; *Buck-
bury Fitzpiers*, *Okford*; *Fitzpaine*,
Budmouth; *Revis*, *Weymouth*; *Canford
Manor*, *Chine Manor*; *Casterbridge*,
Dorchester; *Castle Boterel*, *Boscastle*;
Chalk Newton, *Maiden Newton*; *Chase-
town*, *Crauborne*; *Christminster*, *Ox-
ford*; *Corcesgate Castle*, *Corfe Castle*;
Downstaple, *Barnstaple*; *Durnover*,
Fordington; *East Egdon*, *Affpuddle*;
Emminster, *Beamminster*; *Endelstow*, *St.
Juliot's*; *Enkworth*, *Encombe*; *Evers-
head*, *Evershot*; *Falls Park*, *Mells*;
Flintcomb Ash, *Dole's Ash*; *Great
Hintock*, *Minterne Magna*; *Havenpool*,
Pool; *Holmatoke*, *East Stoke*; *Ivell*,
Yeovil; *Kingsbere*, *Bere Regis*; *King's
Hintock Court*, *Melbury Sampford*;
Knottiswood, *Wimborne St. Giles*;
Knollsea, *Swanage*; *Leddenton*, *Gilling-
ham*; *Little Hintock*, *Melbury Osmund*;
Lornton, *Horton*; *Lulshhead*, *Lulworth*;
Marlott, *Marnhull*; *Marygreen*, *Fawley
Magna*; *Melchester*, *Salisbury*; *Middle-
ton Abbey*, *Milton Abbey*; *Milpound St.
Jude's*, *Milborne St. Andrews*; *Narro-
bourne*, *East Coker*; *Nuzzlebury*,
Hazlebury Bryan; *Overcombe*, *Sutton
Poyntz*; *Port Bredy*, *Bridport*; *Portsham*,
Portisham; *Quartershot*, *Aldershot*;
Ringworth, *Ringstead*; *Sandbourne*,
Bournemouth; *Shaston*, *Shaftesbury*;
Sherton Abbas, *Sherborne*; *Shottsford
Forum*, *Blandford Forum*; *Solentsea*,
Southsea; *Stancy Castle*, *Dunster*;
Stickleford, *Tinctor*; *Stoke Barchilla*,
Basingstoke; *Stourcastle*, *Sturminster
Newton*; *Talbothays*, *Norris Mill Farm*;
Tolchurch, *Tolpuddle*; *Toneborough*,
Taunton; *Warborne*, *Wimborne*;
Weatherbury, *Puddletown*; *Wellbridge*,
Woolbridge; *Weydon Priory*, *Weyhill*;
Wintoncester, *Winchester*; *Yewshill*,
Farrs.

Thomas Hardy. Place-names in the Wessex novels, with their generally accepted identifications. The fictitious names are printed in italic.

"dramatic or personative in conception," that is, utterances of invented persons, and not necessarily his own. But it is impossible not to find in them the strong, sad sincerity, occasional bitterness, and tragic recognition of life's futility that form a kind of ground bass to the novels. Hardy's poems, it should be added, are original in manner, and but lightly touched with verbal grace and felicity; but he is a genuine poet; the lyric inspiration of his verse is unquestionable. It is not impossible that the poet may survive the story-teller.

The suspicion of exhausted power aroused by *The Well-Beloved* was removed when the most amazing of his works, *The Dynasts*, an epic-drama of the Napoleonic Wars, began to appear in 1904. Two further instalments came in 1906 and 1908. It is a pity that the work did not first appear as a completed thing, for the vastness of the design and the mastery of execution could not be appreciated in a periodical reading of parts coming at intervals of two years. The unique greatness of *The Dynasts* is generally admitted. Hardy's implied view of man as a puny, temporary creature, fretting himself briefly against a spectral background of remote and inexorable forces, here becomes explicit, for the events of the conflict are shown first in the dimensions of man's own experience, and then as the faint writhings of ant-like creatures on little plots of earth, watched from above, interpreted by all-seeing spiritual powers.

As poetry, drama, and history, *The Dynasts* is a noble contribution to world-literature. The choral odes of the spirits, the descriptive prose directions and connections, and the serviceable verse of the major dialogue are all in varying degree most admirable. A great life-work is thus fully rounded off by a great achievement.

Thomas Hardy was given the Order of Merit in 1910, and awarded the gold medal of the Royal Society of Literature. He received the degrees of LL.D. (Aberdeen), Litt.D. (Cambridge), Litt.D. (Oxford), and became an Honorary Fellow of Magdalene College, Cambridge. He was twice married, first, in 1874, to Emma Lavinia Gifford, and next, in 1914, to Florence Emily Dugdale.

Published Works. *Desperate Remedies*, 1871; *Under the Greenwood Tree*, 1872; *A Pair of Blue Eyes*, 1873; *Far from the Madding Crowd*, 1874; *The Hand of Ethelberta*, 1878; *The Return of the Native*, 1878; *The Trumpet-Major*, 1880; *A Laodicean*, 1881; *Two on a Tower*,



Thomas Hardy. The house near Dorchester where the novelist and poet was born in 1840. Right, Max Gate, his home in later life at Dorchester



1882; *The Mayor of Casterbridge*, 1886; *The Woodlanders*, 1887; *Wessex Tales*, 1888; *A Group of Noble Dames*, 1891; *Tess of the D'Urbervilles*, 1891; *Life's Little Ironies*, 1894; *Jude the Obscure*, 1896; *The Well-Beloved*, 1897; *Wessex Poems*, 1898; *Poems of the Past and Present*, 1902; *The Dynasts*, I, 1904; II, 1906; III, 1908; *Time's Laughing-Stocks*, 1909; *A Changed Man*, 1913; *Satires of Circumstance*, 1914; *Moments of Vision*, 1917. *The Poems and The Dynasts* have been re-issued complete in two volumes; of the prose there are three complete editions, *Wessex Novels*, 1895, etc.; *The Wessex*, 1912, etc.; *The Mellstock*, 1920, etc.

Bibliography. *The Art of Thomas Hardy*, Lionel Johnson, 1895; *Thomas Hardy*, A. Macdonnell, 1894; *The Wessex of Thomas Hardy*, B. C. A. Windle, 1901; *The Wessex of Romance*, W. Sherren, 1902. *The Hardy Country*, C. G. Harper, 1904; *Thomas Hardy, a Critical Study*, L. Abercrombie, 1912; *Papers*, W. Sharp, 1912; *Thomas Hardy's Wessex*, H. Lea, 1913; *Thomas Hardy*, H. Child, 1916.

Hardy, THOMAS BUSH (1842-97). British painter. Born at Sheffield, he was an extraordinarily prolific painter of marine subjects, chiefly in water-colour. He exhibited at the Royal Academy from 1872, and became a member of the Royal Society of British Artists in 1884. He died Dec. 15, 1897.

Hardy, SIR THOMAS MASTERMAN (1769-1839). British sailor. Born at Kingston, Dorset, April 5, 1769, he served some years in the merchant service before he was appointed lieutenant in the navy in 1793, and attached to Nelson's squadron off Genoa. In 1796 he served under Nelson in the *Minerva*.



After R. Evans

In 1798 he was present at the battle of the Nile, and was promoted to Nelson's flagship, the *Vanguard*.

In command of the *Victory* in 1805, he acted as captain of the fleet during the remainder of Nelson's command. He was by Nelson's side when the admiral was struck, was witness to his will, and attended him until his death. Made a baronet in 1806 Hardy was sent



hare. Blue hares, *Lepus timidus*. Above, common hares, *L. europaeus*

to the N. American station, where, except three years (1809-12) at Lisbon, he remained until 1815.

In 1819 he was made commander-in-chief of the S. America station. In 1825 he was promoted rear-admiral, and in 1830 became first sea lord. In 1834 he was made governor of Greenwich Hospital, where he spent the remainder of his life. He died Sept. 20, 1839. See Nelson; consult Nelson's Hardy: his Life, Letters and Friends, A. M. Broadley and R. G. Bartolot, 1909.

Hardyng, JOHN (1378-1465). English chronicler. A native of Northumberland, he began life as a

soldier. He saw a good deal of service in France, being at Agincourt, and he was sent on an errand to Rome. He passed much of his time in compiling a rhyming chronicle of England. The first edition ended in 1436; another, Yorkist in its tone, was prepared by him for Richard, duke of York, and yet another for Edward IV; it is inaccurate and dull. He lived from about 1436, at Kyme, Lincolnshire.

Hare. Name applied generally to a large family of rodents, which includes the hares proper and the rabbits. There are about nine well-marked local races or varieties, mostly grey or brown. They are all remarkable for their long hind legs and ears, and their short curved tails, and are capable of great speed. The common hare is distinguished from the rabbit by its larger size, longer limbs and ears, and the reddish-brown hue of its fur. It also differs greatly in its habits, especially in not living in burrows.

The hare lives usually in the open, crouching in a furrow or in a hollow in the grass, and only takes shelter in the undergrowth of thickets in wet weather. It sits so very closely that often it will not stir until almost trodden upon. The hare feeds mainly on corn, vegetables, and bark of young trees.

Hare, AUGUSTUS JOHN CUTBERT (1834-1903). British author. Born in Rome, March 13, 1834, he was



Augustus Hare, British author Elliott & Fry

educated at Harrow and University College, Oxford. Much of Hare's life was spent abroad, and his guide-books bear witness to his intelligent observation. Among these are *Walks in Rome*, 1871; *Wanderings in Spain*, 1873; *Walks*

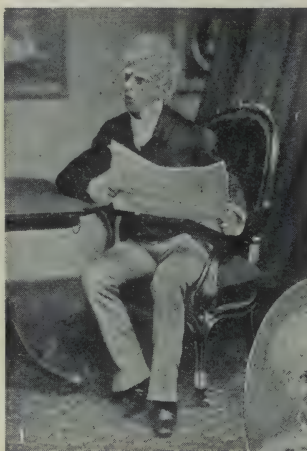
in London, 1878; Florence, 1884; Cities of Central Italy, 1884; Paris, 1887; and several books on France.

He also published *The Memorials of a Quiet Life, 1872-76*, a tribute to the lady who had adopted him, and the rather tedious *Story of My Life, 1896-1900*, which will always be popular for its anecdotes of well-known people. He died Jan. 22, 1903.

Hare, FRANCIS (1671-1740). English prelate. Born Nov. 1, 1671, he was the son of an Essex man Richard Hare. He was educated at Eton and King's College, Cambridge, and was ordained. In 1704 he was made chaplain-general to the army in Flanders, where he remained for some years. In 1715 he was appointed dean of Worcester and in 1726 dean of S. Paul's. In 1727 he was chosen bishop of Worcester, and in 1731 was translated to Chichester, retaining all the time the deanery of S. Paul's. He died April 26, 1740. He wrote a good deal, took part in the Bangorian Controversy, and had a controversy with Bentley. Francis Hare-Naylor (1753-1815), the author, was his grandson.

Hare, SIR JOHN (1844-1921) British comedian and actor-manager. B. in London, May 16, 1844, and educated at Diggeswick Grammar School, in 1865 he began his appearance in London in the leading parts of the Robertson series of comedies. From 1875-79 he was manager of the old Court Theatre, and from 1879-88 was associated with W. H. Kendal as manager of the St. James's Theatre. From 1889-95 he was lessee of the Garrick. He brought out and played in many of Arthur Pinero's plays from *The Money Spinner*, 1881, to that of *The Gay Lord Quex*, 1899. One of his most popular parts was Benjamin Goldfinch in *A Pair of Spectacles*, 1890. He was knighted in 1907. He died on Dec. 28, 1921.

Hare, JULIUS CHARLES (1795-1855). British clergyman and author. Born at Valdarno, Italy, Sept. 13, 1795, he was educated at Cambridge, and became tutor at Trinity College. In 1832 he was appointed rector of Hurstmonceux, and archdeacon of Lewes in 1840. He was the intimate friend of the leading spirits of the Broad



Church party, and became chaplain to the queen in 1853. In collaboration with his brother, A. W. Hare



Julius Chas. Hare, British author

Hare and Hounds. Variation of cross-country running. It is a healthy form of winter exercise in which generally one or two, but sometimes more, of the fleetest runners participating are selected as the hares, the remainder, unlimited in number, being the hounds. The hares set off at a fast pace laying a trail of paper-cuttings as they go, and the pack, who follow at an interval of about ten minutes, endeavour to overtake them. By adroitly doubling and laying cross-trails the hares endeavour to avoid capture, and frequently manage to throw their pursuers off the scent. See *Running*.

Harebell (*Campanula rotundifolia*). Perennial herb of the natural order Campanulaceae. It is a native of Europe, N. Africa, N. Asia,



Harebell, flowers and buds

and N. America. Near the rootstock the leaves are heart-shaped or kidney-shaped, but up the stem become more slender and elongated. The stems are slender, angled, with blue bell-shaped flowers. See *Bell-flower*; *Flower*.

Harefield. Parish and village of Middlesex, England. Situated above the Colne, between Uxbridge and Rickmansworth, it has asbestos and lime works. The manor, in Edward the Confessor's time the property of Countess Goda, passed in 1284 to the Bacheworths, in 1315 to the Swinlands, and



Sir John Hare. 1. As Lord Kilclare in *A Quiet Rubber*, 1876. 2. As Benjamin Goldfinch in *A Pair of Spectacles*, 1890. 3. As Colonel Daunt in *The Queen's Shilling*, 1879

then to Sir John Newdegate, whose descendant sold it in 1585; it returned to the Newdegates in 1675.

Lord Keeper Egerton, who married Alice Spencer, dowager countess of Derby, acquired it in 1601, and at Harefield Place entertained Queen Elizabeth in 1602, when, says tradition, Othello was performed. Milton's *Arcades* was performed here for the countess (d. 1637) in 1634. The mansion, which has had two successors, was burnt in 1660. The church of S. Mary, founded 1300, is rich in monuments. There are remains of Moor Hall, a camera or cell of the priory of S. John, Clerkenwell; also some almshouses founded by the countess of Derby. Pop. 2,400

Hare-lip. Congenital deformity in which the upper lip is fissured. Usually there is a central fissure in the margin of the lip. The defect may involve the nose and the hard and soft palate. Hare-lip can be improved by surgical treatment.

John Hare
Foulsham & Banfield



Harem. A Gilded Cage. Oriental scene painted by F. Goodall, R.A.

Harem (Ar. *harem*, sacred, set apart, i.e. forbidden). Name applied in Mahomedan countries to that part of the house in which the women are secluded. The meaning of the word has been extended to include all the women thus kept apart. Although the harem is practically a Mahomedan institution, the custom of secluding the female members of the household is of great antiquity in the East; excavations prove that the kings of ancient Persia confined their womenfolk to a separate part of the palace, while various passages in the O.T. provide evidence to the same effect.

According to the Koran, no woman may allow her face to be seen by any man save her father, husband, son, or close blood relations, and obedience to this precept, together with the practice of polygamy and concubinage, led to special apartments or entire wings of large houses being devoted to the women of the establishment. Conditions of life in the harem differ widely in Mahomedan countries. The law of Islam permits a man four wives (the sultan is allowed seven), and each wife may demand a separate apartment.

In India and Turkey the inmates have more liberty than elsewhere, and the rule of the eunuchs, in whose charge the harems are frequently placed, is less evil. Idleness and scandalmongering are the worst features of the system.

Western ideas are gradually having their effect on the harem, and the institution, in more civilized parts of Islam, is becoming greatly modified. See Polygamy.

Haren, ONNO ZWIER VAN (1711-79). Dutch poet and statesman. Brother of Willem van Haren, he was born at Leeuwarden on April 2, 1711, and occupied various offices of state in the Netherlands, being a staunch supporter of the Orange family. He wrote much verse, among his most notable volumes being *Die Koophandel*, 1769; *Agon*, a poetic tragedy, 1769; *De Geusen*, 1771; *De Vrijheid*, 1778. He translated Pope's

Essay on Man. He died Sept. 2, 1779.

Haren, WILLEM VAN (1710-68). Dutch poet. Born of a distinguished family at Leeuwarden, Feb. 21, 1710, Haren studied at Franeker and Groningen. In 1728 he inherited the castle and estates of Henkenshage. His best work was the epic poem *Gevallen van Friso*, 1741, one of the notable long poems in the language. He died July 4, 1768.

Hares. North American Indian tribe of Athapaskan stock; properly the Kawchodinné, or great-hare-people. Living N. and W. of the Great Bear Lake, Canada, they number about 600.

They subsist on fish, reindeer, and the Arctic hare, which also furnishes their clothing. They are in friendly contact with the Eskimos.

Hare's-ear (*Bupleurum rotundifolium*). Annual herb of the natural order Umbelliferae, native of Europe and W. Asia. The stem is hollow, appearing to run through the base of the thick, oblong or roundish, glau-



Hare's-ear. Leaves and flower-head of *Bupleurum rotundifolium*

cous leaves. The minute yellow flowers form tiny umbels in the centre of a cup of bracts whose edges are united. A shrubby perennial (*B. fruticosum*), from Spain, is grown in gardens.

Hare's-foot Fern (*Davallia canariensis*). Fern of the natural order Polypodiaceae, native of W



Hare's-foot Fern. Rootstock and wedge-shaped fronds

Europe and the Canaries. The rootstock creeps above ground, densely clothed with shaggy brown scales; the frond is wedge-shaped, cut up into leaflets (pinnae) which are much divided.

Hare's-tail Grass (*Lagurus ovatus*). Annual grass of the natural order Gramineae. It is a native of

W. and S. Europe, N. Africa, and W. Asia. It has numerous stems, broad, flat leaves, and flower spikelets crowded into a white, hairy oval head, which suggested the name.

Harewood, EARLOF. British title borne since 1812 by the family of Lascelles. Edward Lascelles, the head of a well-known Yorkshire family, was created Baron Harewood in 1796, an earlier creation of this name having become extinct when its first holder died. In 1812 he was made an earl. The family estates are in Yorkshire (W.R.), the chief seat being Harewood House, near Leeds, and the earl's eldest son is known as Viscount Lascelles. (q.v.)



Hare's-tail Grass, showing root, leaves, and flower

Harfleur. Town and seaport of France. In the dept. of Seine Inférieure, it stands on the Lézarde, near where it falls into the Seine. The chief building is S. Martin's Church, a Gothic building known for its high steeple and fine portal. There are ruins of the



Harfleur, France. The church of S. Martin, with its beautiful Gothic spire

old castle, but the other fortifications have disappeared. A 17th century château occupies the site of the castle.

Harfleur was a considerable port in the Middle Ages, but later it was rendered useless by the accumulation of sand in the Lézarde. However, in 1887 a canal was cut connecting it again with Havre and the Seine. A new harbour with docks and other accommodation for vessels and their cargoes were built along the canal, and the port has a trade in coal and timber. There is some fishing, while other industries are connected with oil and spirits. Harfleur was besieged and taken by Henry V of England in 1415, being then the chief port of Normandy. In 1445, inspired by John de Grouchy, the French drove out the English, and although the latter returned, they finally lost the place in 1449. Pop. 2,700.

Hargicourt. Name of two villages in France prominent in the Great War: (1) in the dept. of Aisne, slightly S. of Ronssoy. It fell to the Germans in the first day of their great March offensive, 1918. It was retaken by an Australian division, Sept. 18, 1918. (2) In the dept. of Somme, 6 m. S.E. of Moreuil. This Hargicourt was captured by the Germans, March, 1918, and stormed by the French, Aug. 9, 1918. See Epéhy, Battle of; Somme, Battles of the.

Hargood, Sir WILLIAM (1762–1839). British admiral. Born May 6, 1762, his father was in the navy, which he himself entered in 1773. As a youth he saw a good deal of active service, especially during the war against America. In 1792 he obtained command of a ship, the *Hyaena*, but in 1793 this was taken by a French vessel, and the officers were made prisoners. They escaped, however, and soon Hargood, acquitted by a court-martial, was commanding another ship. He did good service in suppressing the mutiny of 1796; at Trafalgar he led the *Belleisle*, and he was almost constantly at sea until 1814, being appointed to command a squadron in 1810. In 1815 he was knighted, in 1831 was made an admiral, and from 1833–36 he was commander-in-chief at Plymouth. Hargood, who died Sept. 11, 1839, owed much to his friendship with William IV, under whom he served in the navy.

Hargreaves, JAMES (d. 1778). British inventor. A carpenter and weaver of Standhill, near Blackburn, in 1760 he invented an improvement of the carding machine, and about four years later built a machine which contained eight spindles in a row. This was called the spinning jenny, and its invention marks the beginning of an era in industrial history. Together with Kay's flying shuttle it revo-

lutionised the cotton and woollen industries, multiplying their output many times.

Imagining that its introduction would replace human labour by machinery and thus mean ruin for themselves, some Blackburn spinners raided Hargreaves's house and destroyed his apparatus in 1768. He thereupon moved to Nottingham, and notwithstanding opposition, his machines were soon widely used. After his death it was asserted that he had appropriated the invention of Arkwright, and the matter was the subject of a lawsuit. See Arkwright; Spinning.

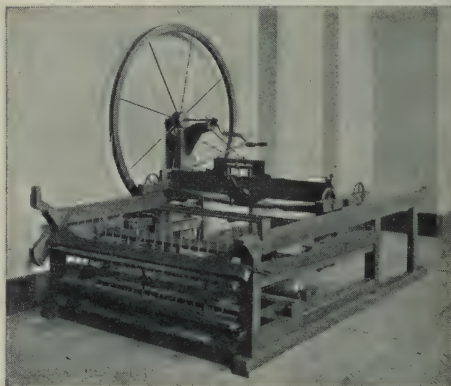
Hari or **HERI** RUD. River of Afghanistan, the ancient Arius. Rising in the Hindu Kush, it has a length of about 700 m. It flows through N.W. Afghanistan, and for part of its course forms the boundary between Afghanistan and

Persia. Herat is situated on it. It finally loses itself in the Tejen swamps of the Transcaspien prov.

Haricot, FRENCH BEAN OR KIDNEY BEAN. Seed of *Phaseolus vulgaris*. The green pods, called by the French *haricots verts*, when boiled form a wholesome and excellent vegetable. They can be preserved in salt for some time for winter use. The beans, either dried or fresh, are boiled. If dried, it is necessary to soak them in cold water for about twenty-four hours, or they may be placed in cold water and brought to the boil. After simmering for half an hour they are again placed in cold water, and this process is repeated till the beans are tender. The older meaning of the French word *haricot* is a dish of stewed mutton, beans, and other vegetables. Pron. harryko. See Bean.

Haricot Redoubt. Turkish strongly fortified position on the Kereves Ridge, Gallipoli peninsula, prominent in the fighting there in the Great War. It lies on the S.E. part of Gallipoli near Krithia (q.v.). It was stormed by the British, June 4, 1915. See Gallipoli, Campaign in.

Häring, GEORG WILHELM (1798–1871). German novelist, also known as Willibald Alexis. Born at Breslau, June 29, 1798, he saw some military service, was engaged in law, and then took up literary work. He was a prolific



James Hargreaves. Model of his Spinning Jenny, now in the Science and Art Museum, South Kensington, London

writer of poems, plays, and historical novels, many of the last having become classics. Cabanis, 1832; Roland von Berlin, 1840; Die Hosen des Herrn von Bredow, 1846–48, are the best known of his romances. He was much influenced by Sir Walter Scott, and his early novels, Walladmoor, 1823–24, and Schloss Avalon, 1827, were long considered works of that author. Häring died at Arnstadt, Thuringia, Dec. 16, 1871.

Harington, Sir Charles Harington (b. 1872). British soldier. Born at Chichester, May 31, 1872,



Sir Chas. Harington,
British soldier
Russell

when he won the D.S.O. From 1903-7 he was an officer at the Royal Military College, and in April-Nov., 1909, was specially employed at the War Office. From 1911-13 Harington was brigade major, of the 6th brigade, Aldershot.

During the Great War he was brigadier-general on the general staff, 1915-16, and later chief of staff to General Plumer. When the latter went to Italy, Oct., 1917, Harington accompanied him as chief of the general staff of the British forces. He was appointed deputy chief of the Imperial General Staff, War Office, in April, 1918. In Sept., 1920, he was appointed G.O.C. the army of the Black Sea, and in 1923 the Northern command. He was knighted in Jan., 1919, and was promoted lieutenant-general in Sept., 1920.

Harington OR **HARRINGTON, JAMES** (1611-77). English writer. Born at Upton, Northamptonshire, Jan. 7, 1611, and educated at Trinity College, Oxford, he passed some time abroad, examining different forms of government, especially that of Venice. He became a



James Harington,
English writer
From a print

gentleman of the bedchamber to Charles I, and in 1646, although holding republican views, he was again attached to the king, then in captivity. They had discussions on politics, but Harington, having failed to arrange terms between Charles and his foes, lost his position. He lived quietly under the Commonwealth, but in 1661 was imprisoned for a short time. His last years were clouded by mental trouble, and he died in London, Sept. 11, 1677. His body was buried in S. Margaret's, Westminster.

Harington is known solely by his one book *Oceana*. Published in 1656, and dedicated to Crom-

well, it is a treatise on government, England being *Oceana*, and shows its author as the most original political thinker of his time. According to his teaching, the vital principles in an ideal system of government are a balance of forces, material and intellectual, and a rotation of offices. In some ways he anticipated ideas that were not translated into action until the 19th century. He advocated compulsory education and voting by ballot, put forward plans for breaking up great landed estates, and was a believer in complete religious liberty. His ideas attracted a good deal of attention, and in 1659 a debating society called the Rota Club was founded to discuss them. See *Oceana*, ed. H. Morley, 1887.

Harington, Sir John (1561-1612). English writer. He was born at Kelston, Somerset, and



Sir John Harington,
English writer
After J. Thurston

Queen Elizabeth became his godmother, his parents having suffered imprisonment for their loyalty to her in 1554. He was educated at Eton and Cambridge, and studied law at Lincoln's Inn. His wit and liveliness made him a favourite at court. In 1591 he published a translation of Ariosto's *Orlando Furioso* with a prefatory *Apologie of Poetrie*. Later he issued a number of satires of a somewhat free character, and aroused the queen's anger by a supposed reference to the earl of Leicester. Having been forgiven, he went to Ireland in 1599 with Essex, by whom he was knighted.

When the queen was nearing her end, he wrote *A Tract on the Succession to the Crown*, in favour of James of Scotland (publ. 1880), and in 1605, with a view to becoming chancellor of Ireland, he

wrote *A Short View of the State of Ireland* (publ. 1879). He died at Kelston, Nov. 20, 1612. His letters and miscellanies, brought together in *Nugae Antiquae*, 1769, throw much light on Elizabethan times.

Hariri, Abu Mohammed al-Qasim al (1054-1122). Arabic grammarian and

poet. He was born and died at Basra on the Tigris. Author of several grammatical treatises, of which two are extant, his most famous work is his *Maqāmāt* (Assemblies or Lectures), a collection of 50 rhymed tales composed at the suggestion of a distinguished Persian statesman. The hero of them is Abu Seid, a disreputable but fascinating scamp, full of genius and learning, who was driven into exile and poverty when the Crusaders took his native town. There are Eng. trans. by T. Preston, 1850, and T. Chenery, 1867.

Harland, Henry (1861-1905). American novelist. Born at St. Petersburg, March 1, 1861, he



Henry Harland,
American novelist

spent most of his later years in London, and died in Italy at San Remo, Dec. 20, 1905. His early books were realistic studies of American Jewish life written under the pseudonym of Sidney Luska. He then became known in Great Britain as editor of *The Yellow Book* and as author of three volumes of short stories, *Grey Roses*, 1895, and *Comedies and Errors*, 1898; *Mademoiselle Miss*, 1903; and of three novels, *The Cardinal's Snuff Box*, 1900, *The Lady Paramount*, 1902, and *My Friend Prospero*, 1904. His later work won for him a deserved reputation as a stylist.

Harlaw. Spot in Aberdeenshire, famous for the encounter here in 1411. It stands near the river Ury, 2 m. N.W. of Inverurie. Donald, lord of the isles, collected his Highlanders to take possession of the earldom of Ross. He was met by troops under the earl of Mar, and his force was completely crushed.

Harlech. Town of Merionethshire, Wales. It is 10 m. from Barmouth, on the Cambrian Rly.,



Harlech, Merionethshire. The castle, famous in Welsh song

and is famous for its ruined castle overlooking the sea. There was a fortress here in Roman times, but the present building dates from the reign of Edward I. In 1468 the castle was taken by the Yorkists after a long siege, this incident having, it is said, given rise to the Welsh song of The March of the Men of Harlech. It was dismantled after the Civil War, when it was one of the last places to hold out for Charles I. The town has declined in importance. It was made a borough by Edward I, and was long the county town of Merionethshire. There is a golf course on the sands. Pop. 1,800.

Harleian Manuscripts. Collection made by Robert Harley, 1st earl of Oxford (1661-1724), and his son Edward (1689-1741). It contained 7,639 volumes of MSS and 14,336 rolls and other deeds. In 1753 it was purchased for £10,000 by the Government and placed in the British Museum. See British Museum; Manuscripts.

Harlem. Alternative spelling of the city in the Netherlands better known as Haarlem (*q.v.*).

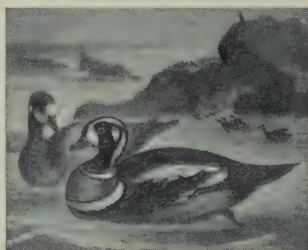
Harlemmer Meer or **HAARLEM LAKE.** Commune of Holland, in the prov. of N. Holland. Lying to the S. of Haarlem, this district is among the largest of the Dutch *polders*, or reclaimed lakes or morasses. It was formed by pumping away the water of a large lake formerly covering the area, the work being carried out by the state between 1840 and 1853, the greater part of the cost being met by the sale of the reclaimed land. The district thus saved covers about 72 sq. m., and is fertile and well tilled, with an estimated pop. of 20,000. The chief villages include Nieuw Vennep and Abennes, and the railway runs along the western edge.

Harlequin (Ital. *arlecchino*). Stock character in pantomime. The origin of the name is uncertain. According to one explanation, it is a corruption of Il Lecchino, the licker of plates, Harlequin having been originally a gluttonous eating-house menial, who abandoned that profession and became first a soldier, then comedian, tumbler dancer, merry-andrew, and mountebank at one and the same time.

Disguised as the marquis of Sbruffadeli, he goes to Court and makes love to the Court ladies and to their waiting-maids. Columbine (*q.v.*) is sometimes his mistress, sometimes his wife. "Harlequin... with his black mask, his many-coloured lozenges, his shower of spangles, represents love, wit, mobility, audacity, all the showy and vicious qualities" (T. Gautier).

Another suggested derivation is from old Fr. *hellequin*, demon; cf. A.S. *hella cynn*, people of hell. The harlequin of English pantomime is a mischievous character who plays tricks on the clown and the pantaloons, to whom he is supposed to be invisible, and who engages in acrobatic dances with the columbine. See Pantomime; consult also History of the Harlequinade, Maurice Sand, 1915.

Harlequin Duck (*Anas histrionica*). Species of wild duck, plentiful in the Arctic regions and occasionally visiting Great Britain. It is a handsome bird, the male



Harlequin Duck. Specimens of male and female birds

having lead-coloured plumage, with purple bars on the wings and white markings on the head, neck, and breast. It spends the summer inland, and is found in winter about rocky coasts.

Harlequins. Rugby football club. It was established in 1871, and soon ranked as one of the chief of those playing around London. Its first ground was at Wandsworth Common. Under A. D. Stoop, the club was very successful, and in 1908 its headquarters were removed to the large new ground at Twickenham, opened by the English Rugby Union.



Harlequin. George Grossmith dressed as this character of pantomime
Lafayette

Harlesden. District of Middlesex, England. In the urban district of Willesden, it lies between Kensal Green and Stonebridge Park, on the Harrow Road. It is served by the L. & N.W. and Bakerloo (Tube) rlys. and has a wharf on the Paddington branch of the Grand Junction Canal. Once known as Harlesden Green, a hamlet of Willesden, it is now closely built over. The church of All Souls dates from 1879.

Harley Street. London thoroughfare connecting Marylebone Road and Cavendish Square, W. Named after Edward Harley, 2nd earl of Oxford, its notable residents have included Sir Philip Francis, William Beckford, W. E. Gladstone, Sir C. Lyell, A. A. Procter, B. W. Procter, Allan Ramsay, and J. M. W. Turner. Many of the leading medical specialists and physicians have consulting-rooms here.

Harlingen. Town and seaport of Holland. In the province of Friesland, it stands on the Zuyder Zee, 16 m. from Leeuwarden. It has a large modern harbour built in 1870-71 and enlarged in the 20th century, and from it are exported butter, cheese, cattle, potatoes, and other products of Friesland, while timber, coal, cotton, and jute are imported. There is regular steamship communication with London, Amsterdam, and other ports. With the interior it is connected by railway and canal, while it has a service of tramways. The town hall and an old church are the chief buildings. Pop. 10,500.

Harlington. Parish and village of Middlesex, England. It is N.W. of Hounslow, and 1 m. S. of Hayes station on the G.W.R. Formerly called Herdintone and Hardington, it gave its name, short of the first letter, which was omitted by an oversight in the patent, to Henry Bennet, 1st earl of Arlington (*q.v.*). The church of S. Peter and S. Paul, restored 1867, with N. aisle added in 1881, contains brasses, effigies, and other monuments of the Bennet, Ossulton, Tankerville, and De Salis families. See Hayes.

Harlow, GEORGE HENRY (1787-1819). British painter. Born in London, June 16, 1787, he studied under Sir Thomas Lawrence and others, and painted history and portraits. His Trial Scene, 1817, from Shakespeare's Henry VIII, with a portrait of Mrs. Siddons as Queen Catherine, attracted much attention. In 1818 he visited Italy to improve his defective technical powers, and died in London, Feb. 4, 1819. Although a follower of Lawrence, he possessed an artistic originality which earned him a high reputation.

Harman, Sir John (d. 1673). English sailor. Of Suffolk birth, he first appears as commanding the



Sir John Harman,
English sailor
After Lely

flag in the Royal Charles in the battle of June 3, when the Dutch were defeated. Knighted for his share in the victory, he was promoted rear-admiral and in 1666 was severely wounded in the battle off North Foreland. In 1667 he went to the West Indies as commander-in-chief and destroyed the French fleet at Martinique. Carrying the campaign ashore, Harman took Cayenne and Surinam. In 1672 he took part in the battle of Sole Bay. Next year he distinguished himself against de Ruyter, sitting, owing to illness, in a chair on the deck while directing operations. He died Oct. 11, 1673.

Harmattan. Dry, dust-laden wind which blows away from the Sahara between Oct. and March. The harmattan, locally known as the Doctor, brings cool dry weather to the steaming jungles of West Africa, and is health-giving. The quantities of fine dust which it brings are a nuisance.

Harmer, Sir Sidney Frederic (b. 1862). British scientist. Born at Norwich, March 9, 1862. he was educated at

University College, London, of which he became fellow, and at King's College, Cambridge, where he was fellow, lecturer and assistant-tutor 1890-1908. He was also superintendent of the university museum of zoology, Cambridge. In 1908 he was appointed director of the natural history departments of the British Museum and keeper of zoology. He was made a F.R.S., and was joint editor of *The Cambridge Natural History*. He was knighted in 1920.

Harmine. Alkaloid which occurs in the seeds of the wild rue (*Peganum harmala*). The seeds contain about 4 p.c. of alkaloids, one-third of which is harmine, the rest being of harmaline.

Harmodius and Aristogiton. Two devoted Athenian friends. When the sister of Harmodius had been insulted by Hipparchus, brother of the tyrant Hippias, they resolved to murder Hipparchus at the festival of the Panathenaea in 514 B.C. Hipparchus was slain, but Harmodius was killed before Hippias could be reached, and though Aristogiton escaped, he was subsequently taken prisoner. Put to torture, he died without giving any information as to the names of his accomplices. Though the motive of the assassination was to satisfy a private injury, yet the tyranny of Hippias had been so oppressive that Harmodius and Aristogiton were honoured as martyrs by later generations.

Harmondsworth. Parish and village of Middlesex, England. It is situated 1½ m. S. of the West Drayton station of the G.W.R., between Harlington and Colnbrook. Called *Hermodesworthe* in Domesday, the manor once belonged to the Benedictine abbey of Holy Trinity at Rouen, from which it passed to William of Wykeham, who settled it upon Winchester College. The old tithe barn, N.W. of the church, has three floors and an open timber roof. The ancient church of S. Mary the Virgin was restored in 1863-64, when the old brasses were stolen. The manor house was pulled down in 1774. *Pron.* Harmsworth.

Harmonia. In Greek legend, daughter of Arès and Aphroditè, and wife of Cadmus. Among her wedding presents were a robe and necklace which brought misfortune on all those who owned them. According to one story, they were the gift of Hephaestus, who desired to avenge her mother's unfaithfulness. *See* Alcmæon; Cadmus.

Harmonica. Musical instrument. It consists of glass vessels either selected for their intrinsic notes, or tuned by having water poured into them. Penetrating tones are produced by rubbing the glasses with the moistened finger. The Harmonica, first known in the 17th century, was improved by Richard Pockrich, an Irishman, and became a fashionable instrument in the middle of the 18th century. It was further developed by Benjamin Franklin, who mounted the glasses on a revolving spindle, their lower edge being made to pass through water. The term also designates a toy having mounted plates of glass, or sometimes metal, struck with a small wooden hammer.

Harmonic Motion. Term which may be used as the general description of the periodic oscillatory type of motion which is so

common in nature, and of which the motions of the tides, the vibrations of a violin string, and the beating of a pendulum are familiar examples. The ideally simple type of harmonic motion is known as "simple harmonic motion," and it has been found possible, by the method known as "harmonic analysis," to resolve every harmonic motion into a combination of different simple harmonic motions.

Simple harmonic motion is defined as follows. If we look at a particle, which is moving uniformly in a circle $Q^1 M Q N$, from a point P some distance outside it (*see* diagram Fig. 1), the particle will

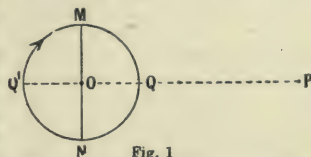
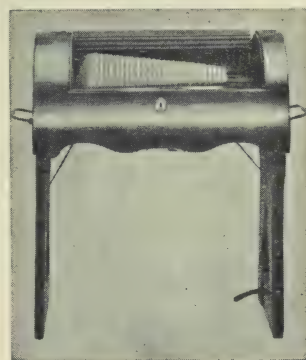


Fig. 1

appear to be moving backwards and forwards along the diameter $M O N$. While the particle actually moves with uniform speed along the semi-circle $N Q^1 M$, it will appear to the observer at P to move with increasing speed from N to O , and then with decreasing speed from O to M ; its apparent motion is then reversed, and the particle returns to N , again reaching its highest apparent velocity when opposite the centre O . A particle which moves to and fro along a line $M O N$ as the particle considered appears to do, is said to have a simple harmonic motion.

The bob of a pendulum which is beating small oscillations is an actual example. The maximum distance attained from the centre of the motion is called the amplitude, while the time of a complete oscillation backwards and forwards



Harmonica. A favourite musical instrument of the 18th century
From *Old English Instruments of Music*,
Methuen & Co.

is the "periodic time" or the period. A diagrammatic representation of simple harmonic motion may be obtained by plotting the distance from the centre against the time; the resulting curve is shown in Fig. 2. This curve is the outline of the section of the simplest type of water wave, or tidal wave.

The method of harmonic analysis is based on a mathematical theorem known as Fourier's theorem, which demonstrates that any periodic motion, however complicated, can be built up as a combination of simple harmonic motions. Thus the actual tides at a given port can be studied as the resultant of several

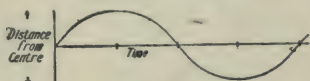


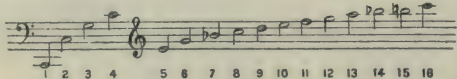
Fig. 2

different factors, such as the positions of the sun and moon, and the special local conditions, each factor expressing itself as a simple harmonic rise and fall of the water-level. This method was introduced by Lord Kelvin, who invented a machine which would carry out the harmonic analysis, and could be used to predict the tides for any time ahead. See Motion.

Harmonicon. THE. Monthly musical journal edited by W. Ayrton. It appeared from 1823 to 1833.

Harmonic Progression. Three quantities A, B, C, are said to be in harmonic progression when A is to C as (A-B) is to (B-C), and B is then said to be the harmonic mean between A and C. It is easy to prove algebraically that the reciprocals of A, B, and C are in arithmetic progression, and this property may be used as an alternative definition. The origin of the term is ascribed to Pythagoras.

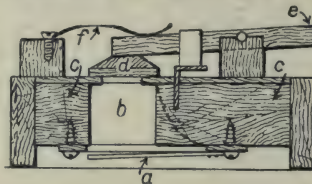
Harmonic Series. Partial tones which accompany every fundamental musical sound. When



an elastic body, such as a stretched string or a column of air in a tube, is set in vibration, there are produced many notes beside the fundamental one, and musical tone depends for its quality upon the proportions in which these other sounds are combined with the fundamental. The science of harmony also derives much of its justification from this phenomenon. The series, is as above when 8 ft. C is the fundamental; similar series are generated by all other notes; Nos. 7, 11, 13, and

14 are not in tune with the ordinary musical scale. Stopped pipes and cylindrical tubes, such as the clarinets, produce only the odd numbers of the series. See Acoustics; Harmony.

Harmonious Blacksmith. Popular name for an Air with Variations in Handel's Fifth Suite



(or lesson) for the harpsichord. The story of Handel taking refuge from the rain in a smithy near Edgware is given at length in Rockstro's Life of Handel, pp. 116-21, 1883. See Handel, the Duke of Chandos and the Harmonious Blacksmith, W. H. Cummings, pp. 17-31, 1915.

Harmonists. Communist religious society first organized in Württemberg, Germany, by John George Rapp (1770-1847). In 1803 Rapp and his followers emigrated to America, and in Butler co., Pennsylvania, in 1805, formed the Harmony Society and the town of Harmony. In 1814 New Harmony was formed on the Wabash, Indiana; and in 1824 the Indiana property was sold to Robert Owen, and a new settlement, called Economy, started on the Ohio.

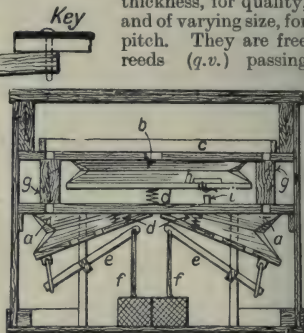
Under the management of Frederick Rapp (Reichart), adopted son of the founder, the society owned flourishing cotton, woolen, silk, and other industries, and made considerable advance also in intellectual culture, but a division occurred in 1832. The society became involved in debt and litigation, and was dissolved in 1906. The members held all property in common, discouraged sexual intercourse, and believed the second coming of Christ to be near. See Rapp and His

Associates, J. S. Duss, 1914.

Harmonium. Musical instrument with a keyboard or keyboards controlling the access of the wind from the bellows to the reeds which produce the sound. In ordinary harmoniums the bel-

lows are actuated by two pedals worked by the player; in larger instruments, especially those which have a pedal keyboard, a hand lever is added, to be worked by a second person. The reeds are

metal tongues of varying curve and thickness, for quality, and of varying size, for pitch. They are free reeds (q.v.) passing



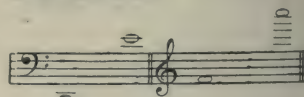
harmonium. sectional diagrams illustrating essential parts of the instrument. Arrangement of interior: a, feeders; b, reservoir; c, wind-chest; d, spiral springs; e, cranks; f, cords connecting crank-levers to foot-boards; g, wind-trunks; h, safety valve; i, peg to open valve. Top, left, bass end of sound-board: a, vibrator; b, mortice; c, sound-board; d, pallet; e, pallet-lever; f, spring

through and through their frames as they vibrate. The reeds are



Harmonium reed.
A. Frame.
B. Vibrating tongue

are divided thus:



In large instruments there is a great variety of stops, but the following are those of fundamental character (French names in *italic*):

	No.		Pitch
Left		Right	
Diapason Bass	1	Diapason Treble	8 ft.
Cor Anglais	2	Double Diapason Treble	16 ft.
Bourdon	3	Clarinet	4 ft.
Clarion Bass	4	Principal Treble	8 ft.
Clairon		Fifre	
Bassoon Bass		Oboe Treble	
Basson		Hautbois	

No. 1, treble and bass, gives standard pitch. Nos. 2 and 3 are respectively an octave lower and an octave higher. No. 4 is of the same pitch as No. 1, but of reedier quality. There are also forte stops, which increase the power of Nos. 3 and 4 by opening shutters; *voix céleste* (treble, 16 ft.), which adds a rank of reeds to No. 2, tuned sharp in order to produce a wavy tone; tremolo, which shakes the wind before it reaches the reeds; *sourdine* (mute), which shuts off half the wind pressure from No. 1, bass, so that it may be soft enough to accompany a melody; and, most characteristic of all, the *expression stop*, which cuts off the

wind reservoir and allows the wind to pass direct from the feeders to the reeds, and consequently leaves the full control of pressure, and with it some measure of securing "expression," to the player's feet.

Percussion action, in the best instruments, improves the attack of the tone by causing tiny hammers to strike the reeds of No. 1 set. *Grand jeu* (or full organ) is a mechanism which gives the full power of the instrument without drawing separate stop knobs. Sometimes there is also a knee or heel swell which opens shutters to increase the tone. See *American Organ*.

augmented or diminished intervals are discords. Intervals one semitone more than perfect or major are augmented and one semitone less than perfect or minor are diminished.

The first recorded attempts at combining musical sounds are those described by Hucbald, a Flemish monk of the 10th century. In his work, "*Enchiridion Musicae*," an example appears as at (A), being thus translated by Burney. This crude device was known as *Organum* or *Diaphony*. Later a drone or holding note was used, over which another part moved freely, as at (B). The note X suggests what is now known as a passing note, or one unessential to the harmony.

This method was succeeded by *Discantus*, which at first consisted in the simultaneous performance of two different tunes. This later development led to counterpoint, which may be described as "the art of combining melodies."

The early rules of harmony were strict and binding, even the 6th being considered a discord. The

HARMONY: ITS PLACE IN MUSIC

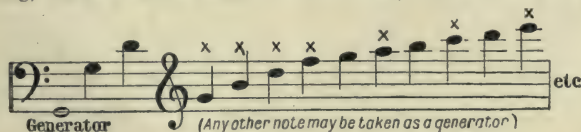
W. G. Alcock, Mus. Doc., Organist of Salisbury Cathedral

The group of articles to which this belongs includes Music and Singing. See also Voice; biographies of the great composers, Bach, Mozart, Purcell, and others, and the articles on musical terms, e.g. Chord; Counterpoint; Fugue

Harmony may be defined as "the art of combining two or more sounds of definite musical pitch, according to accepted rules." Harmony is based upon the scale, which is a succession of eight notes designated alphabetically. The scale is of Greek origin, its introduction being about the middle of the 6th century B.C. The Greeks, though aware of the possibility of combined sounds, used their scales for melodic purposes. The Greek scales or modes may, roughly, be represented by any series of eight consecutive white keys upon the pianoforte. The Ionian mode commencing on C represents our major diatonic scale, and upon this and its minor variant our modern musical system is built. The harmonic possibilities of other series may be explored, such scales being the Aeolian (beginning on A), the Locrian (on B, but rejected), the Dorian (on D), the Phrygian (on E), the Lydian (on F), and the Mixo-Lydian (on G).

Notes and Harmonics

Musical sounds are complex. If a low note on the pianoforte be struck and held, notes of higher pitch will be heard, though of less power, simultaneously. These higher notes are called *harmonics*. Stringed instruments are rich in harmonics, and if the G string of a violoncello be sounded with the bow the harmonics given in addition to the generator (or open string) will be as shown below:



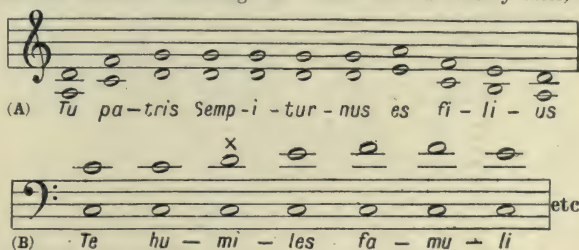
This is known as the *harmonic series*, and though it is not possible to hear every note, their presence may be proved. The notes marked X can be arranged thus:



which is the diatonic major scale of C, starting from the 5th note, or *dominant*; and thus accounted for on acoustical grounds.

The study of harmony presupposes an accurate knowledge of

gradual developments of the next four centuries led to a great advance, such as may be found in the work of Dufay, a Netherlander, born about 1360. Josquin Després, born about a century later, has



intervals, or the distance from one note to another. Intervals are reckoned (1) from the number of names of notes they contain; (2) inclusively, i.e. counting both limits; and (3) upwards, i.e. from the lower to the higher note. Intervals are either concords or discords. Concords are either perfect (4th, 5th, and 8th) or imperfect (major and minor 3rd, and major and minor 6th). 2nds, 7ths, and all

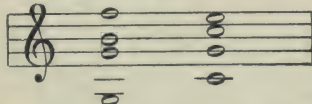
been acclaimed as "one of the greatest geniuses of any period," and in his work there is abundant evidence of the great advance he achieved in developing the contrapuntal devices of his predecessors in the direction of harmony. Early in the 16th century, Palestrina was born, and it is difficult to overestimate his influence on music. Of his numerous compositions, which are still in general use, the *Missa Papae Marcelli* is notable as having been written as an attempt to save the art from the degradation to which it had fallen by its admixture with secular tunes of the worst description.

But the pioneer of modern harmonic thought was Claudio Monteverde, born at Cremona, in 1568. He struck out new paths of his own, questioning and disobeying many rules hitherto regarded as inviolable, and foreshadowing the all-important principle of the relation of chords through a common tonic, or key-note. His operas, *Arianna* and *Orfeo*, show a mastery never before attained. English composers, from Tallis and Byrd (16th century) to Henry Purcell (1658-1695), were also at work, feeling about in new directions. But Purcell, like Monteverde before him, not content with musical rule as he found it, thought for himself, and, experimenting in the most daring manner, wrote passages which command attention to-day. Purcell died when John Sebastian Bach was but ten years old. Bach summed up all that his predecessors had accomplished, and indeed almost any chord in use to-day (except in the complex departures from tradition to be found in the advanced school) may be seen or suggested by this astounding composer.

It is important to note how harmony has developed with the gradual improvement in musical instruments. Composition for voices is naturally restricted, as compared with what may be accomplished on instruments.

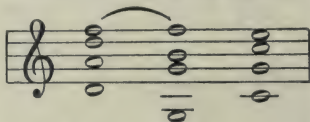
Music may be described as the resolution of discord into concord. A chord in which any note forms a concord with every other note, is called a concord. A chord in which any discord appears is called a discord.

In the following :



the first chord contains the note F, which as a 7th from G is discordant with it. It is also a discord with the B, as they form a diminished 5th, which is a discord. The first chord, then, can give no sense of finality, and must be followed by a chord in which no discordant interval appears. That condition is fulfilled in the second chord, which is called the resolution of the first, and this is a simple example of a principle of which the possibilities of extension are endless. The greatest advances have been made by those daring enough to widen the harmonic outlook of their day. It was necessary in early times to prepare a discord, i.e. the discord-

ant note in a discord must be heard in the previous chord as a concord. In the following passage :



the F is a discord in the 2nd chord, but a concord (imperfect) in the 1st, and is therefore said to be prepared. Even Monteverde dared to disregard this rule, writing in his madrigal, *Cruda Amarilli*, a seventh and a ninth without preparation. The reverse of this may be seen in Schumann's *Entreating Child*, which concludes with an unresolved 7th.

Systems of harmony have been devised from time to time, but the developments of composition leave them successively out of date, while the modern scale, consisting of whole tones, opens up new fields of thought which are being widely explored. Alfred Day published a treatise in 1845, and his theories have been more or less adopted by other writers. The broad principles of these various treatises agree in the main, and such progressions as consecutive perfect 5ths, and octaves between any two parts, have been universally condemned. Day considered the bad effect of the former to be due to the two parts moving practically in two different keys. Consecutive octaves were regarded as weakening the part-writing by making two voices sing the same notes, though one or more octaves apart. Consecutive unisons were forbidden for the same reason.

Harmony, PRE-ESTABLISHED. In the philosophical system of Leibniz, the theory that all the monads (or primary elements), although independent of each other, were connected by a "pre-established" harmony, previously determined by God, whereby what was produced in one monad was reflected in the rest.

Harnsworth. Family name of Viscount Northcliffe (*q.v.*) and Viscount Rothermere (*q.v.*), the eldest and second sons of Alfred Harnsworth (1837-89), barrister of the Middle Temple, London. Two other brothers became known as Liberal politicians: Cecil Bishopp Harnsworth and Sir Robert Leicester Harnsworth, Bart. (b. 1870). The latter was elected M.P. for Caithness in 1900, and made a baronet in 1918. In 1919 Esmond, only surviving son of Viscount Rothermere, was elected M.P. for Thanet, and in 1922, 1923, and 1924.

Harnsworth, CECIL BISSHOPP (b. 1869). British politician. Born Sept. 28, 1869, the third son of Alfred Harnsworth and a younger brother of Viscounts Northcliffe and Rothermere, he was educated at Trinity College, Dublin, where he had a brilliant career, being senior moderator in literature. He then joined his brothers in the firm of Harnsworth Bros. Turning his attention to politics, he fought two seats in the Liberal interest in 1900-1, and in 1906 was returned to Parliament for the Droitwich division of Worcestershire. He lost his seat in 1910, but in 1911 was elected for S. Bedfordshire, and early in 1915 entered the government as under-secretary for home affairs. The formation of the Coalition in 1915 deprived him of that office, but in 1918-22, sitting for S. Bedfordshire, he was under-secretary for foreign affairs.



Cecil B. Harnsworth,
British politician

Elliot & Fry

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Harnack, ADOLF VON (b. 1851). German theologian and church historian. Son of Theodosius Harnack (1817-89), professor of theology at Dorpat, where he was born May 7, 1851, he began his career as lecturer in church history at Leipzig in 1874.



He was appointed professor of eccles. history at Leipzig, 1876; at Giessen, 1879; at Marburg, 1886; and at Berlin, 1887-1905, when he became general director of the royal library. The distinction of "Von" (*q.v.*) was conferred upon him in 1914, when he took part in presenting the German case to neutrals in the Great War.

The most eminent German Protestant theologian of his day though his orthodoxy did not escape suspicion, he was the author of many influential works, including *Gnosticism*, 1873; *Ignatius*, 1878; *Monasticism: Its Ideals and Its History*, Eng. trans. 1903; *History of Dogma*, 1886-89, Eng. trans. 1895-1900; *Outlines of the History of Dogma*, Eng. trans. 1893-97; *Martin Luther*, 3rd ed. 1901; *The Apostles' Creed*, 1901; a *History of Early Christian Literature*, 1897-1904; *What is Christianity?*, Eng. trans. 1901; and studies in the New Testament,

Eng. trans. 1907-12. He collaborated with Von Gebhardt and T. Zahn in editing the Apostolic Fathers, 1876-78, and was joint editor with E. Schürer of the *Theologische Litteraturzeitung*.

Haroeris or **AROERIS**. Name of the earliest Egyptian sun-god, Horus the Aged. He is represented as a hawk-headed man leaning on a staff, and is not to be confused with Horus the Younger, the son of Osiris and Isis. See *Egypt*.

Harold. Masculine Christian name. Of Teutonic origin, it means power for war and in England has retained or perhaps recovered the popularity it won in Anglo-Saxon times. It was introduced by the Danish invaders. In Scandinavian countries it is spelled Harald.

Harold I, CALLED HAREFOOT (d. 1040). King of the English, 1037-40. A son of Canute the Great by an English mother, he came into

Godwin and his sons were banished he went to Ireland, but was soon in England again, and when Godwin died in 1053 became earl of Wessex. Henceforward he was the most powerful man in the land.

His wars against the Welsh gave him a reputation as a fighter, and when Edward died he was chosen and crowned king. A double danger now threatened him. His brother Tostig came from Norway with Harold Haardraade, the king of that country, to recover his lost earldom of Northumbria; and William of Normandy claimed the crown which, he alleged, Harold had promised to secure for him when shipwrecked off the coast of France. Harold crushed the Norwegians at Stamford Bridge, but was killed at Hastings, Oct. 14, 1066. See *Hastings*, *Battle of*.

Harold I (c. 850-c. 933). King of Norway 872-c. 930, known as

930, he divided his kingdom. After his death, c. 933, his eldest and youngest sons, Eric Blood-Axe and Haakon I, fought for the sovereignty, and the former was driven into exile.

Harold III (1015-66). King of Norway 1048-66, known as The Severe in Council (*Haardraade*). He was a son of King Sigurd and half-brother of King Olaf (S. Olaf). When the latter was killed at the battle of Stiklestad, 1030, Harold fled to Russia, where he fell in love with a princess at Novgorod. He then went on to Constantinople, where he became leader of the imperial Varangian guard. He left Constantinople in 1044 for Russia, married the daughter of the prince of Novgorod, and in 1046 returned to Norway, where he shared the kingdom with his nephew, Magnus, and later, 1048, succeeded him as sole ruler. In 1066 he invaded England in support of Tostig, the brother of the English Harold, and was killed at the battle of Stamford Bridge (*q.v.*) in Sept., 1066.

Haroun Al Raschid (763-809). Caliph of Bagdad. Haroun was born at Rai, March 29, 763, and was sent by his father, Mohammed Mahdi, to take part in the invasion of the Eastern Empire in 781; he reached the Bosphorus and imposed tribute on the Empress Irene, 782. He succeeded his brother Musa, as fifth caliph of the Abbassid line, in 786, and opened a reign proverbial for its magnificence and prosperity. Haroun made his court a great centre of art and literature. He waged successful wars against the Greek Empire, 797, and suppressed various provincial revolts.

At first he ruled with the powerful aid of the Barmecides, but sudden jealousy made him order their wholesale murder in 803. In the same year he marched against the emperor Nicephorus, invading Phrygia and destroying Heraclea, and exacted heavy tribute from him. On his way to quell a rising in the province of Khorasan, Haroun died at Tus in March, 809. His name is still remembered, if only as a central figure in *The Arabian Nights*. He was a man of considerable talents and culture, but lacking in strength of character. See *Arabian Nights*; consult also Haroun al-rashid, E. H. Palmer, 1881.

Harp. Musical instrument with strings plucked by the fingers. Employed in some form or other by all races and from remote ages, its earliest forms seem to have been suggested by the hunting bow, whose tightly stretched string will emit a note of fair musical value;



Harold II. The Battle of Hastings and the death of Harold, struck in the forehead by an arrow, Oct., 1066

From a print after P. J. de Loutherbourg

prominence on his father's death in 1035. England had been left by Canute to his son Hardicnute, who was already king of Denmark, but Harold, more of an Englishman than his half-brother, also claimed it. Both had stout supporters, and the Witan divided England between them, Harold becoming king of the district N. of the Thames. Shortly afterwards Earl Godwin and his party tired of serving the still absent Hardicnute, and in 1037 Harold became king of all England. His reign was disturbed by invaders from Scotland and Wales. He died at Oxford, March 17, 1040.

Harold II (c. 1026-66). King of the English. A son of Earl Godwin, he became earl of East Anglia in the time of his brother-in-law, Edward the Confessor. When

Fair-Hair (*Haarfagr*). He was a son of Halfdan the Black, one of the petty rulers among whom Norway was then divided. According to the sagas he fell in love with a beautiful girl, Gyda, who refused to marry him while any other king ruled in all Norway; Harold then vowed that he would not comb or cut his hair until he had obtained the sole kingship. After overcoming several of his neighbours, in a sea-fight at Hafursfiord in 872 he overcame the confederated rulers and united the kingdom. His defeated rivals migrated to the Faroes, Hebrides, Orkneys, Shetland, and Iceland, all of which, except Iceland, he subsequently subdued. He proved a capable ruler of his people, but was troubled by the quarrels of his many sons, among whom, about

when a portion of the bow is reinforced by a hollow resonator the tone is vastly improved. This kind appears to have been carried on the shoulder.

It is a short step from this to an instrument of the old Egyptian type.

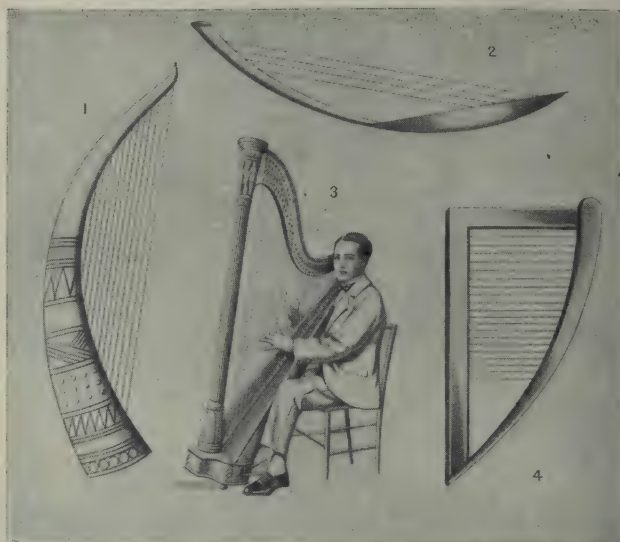
Bow-shaped and two-sided harps were limited in power by the ability of their material to stand the strain of the strings. It was therefore an important advance when a third side was added, as in the next primitive form.

No reasonable limit was now set to the number or the tension of the strings, allowing much greater variety and power, and it only required the accumulated experience of a few centuries of makers and players to raise this type to the finished modern form.

This kind of harp is essentially a diatonic instrument, set in one key, and possessing only seven strings in each octave, but, in the eighteenth century, mechanism was added to shorten some of the strings at will, and thus allow changes of key. The final improvement, after many partial attempts, was made about 1810 by Sebastian Erard, who built a double-action harp of six and a half octaves in the key of C flat, with seven pedals to be depressed halfway or entirely, raising each string respectively a semitone or a tone. Rods from the pedals pass up inside the sound box or resonator, the back of the harp, and actuate little cranks which act on the strings as described.

At the close of the 19th century Messrs. Pleyel brought out a new form of chromatic harp, requiring no pedals. It has a string for each semitone in two sets representing respectively the black and the white keys of the pianoforte. These sets cross each other slightly instead of being in the same plane, so that the player commands either the diatonic or the chromatic notes by plucking the strings at different levels, while a rapid chromatic scale is obtainable by running a finger across the centre where the sets pass each other. Harp music is written on two staves, like pianoforte music, and at actual pitch.

Harpagus. Median general. Ordered by Astyages, king of the Medes, to put to death the infant Cyrus, he handed him over to a shepherd, who spared his life. When Astyages discovered this, he killed Harpagus's son and served him up before his father at a meal. When Cyrus grew up, Harpagus encouraged him to revolt against Astyages, who was defeated and



Harp. 1 and 2. Bow-shaped instruments used in Ancient Egypt. 3. Modern form of orchestra harp. 4. Phrygian trigon

dethroned. Harpagus became one of Cyrus's trusted generals, and reduced the Greek cities of Asia Minor to subjection. See Cyrus the Elder.

Harpalus. Treasurer of Alexander the Great. Having betrayed his trust, he absconded from Babylon to Athens with a large sum of money, with which he attempted to bribe public men to support him against Alexander and Antipater, his regent in Europe. Demosthenes was one of those accused of having accepted bribes. Harpalus failed, however, in his object, and to avoid being handed over to Antipater he fled to Crete, where he was murdered.

Harpalyce. In Greek mythology, daughter of Harpalycus, a Thracian king. Famous for her swiftness of foot and skill in manly exercises, after her father's death she lived in the forests, supporting herself by robbery and plunder. She was at last caught by some shepherds in a net and put to death. *Pron. Harpali-see.*

Harpenden. Urban dist. and village of Hertfordshire, England. It is 25 m. N.W. of London on the Mid. and G.N. Rlys. At Rothamsted, near by, in 1843, Sir J. Bennet Lawes (*q.v.*) started an agricultural experiment station, and his name is commemorated in the Lawes Testimonial Laboratory. At Harpenden also are the S. George's co-educational school, and Dr. Stephenson's Home for Waifs and Strays. The 12th century church was, with the exception of the tower, rebuilt in 1862, and contains

some interesting glass and brasses. A Celtic cross on Church Green was unveiled, Oct., 1920, in memory of the 164 Harpenden men who fell in the Great War. A race meeting is held annually. Pop. 6,172.

Harper, Sir George Montague (1865-1922). British soldier. Born Jan. 11, 1865, he entered the Royal Engineers in 1884. He served in the S. African War, 1899-1900, was employed in mobilisation duties at



Sir George Harper, British soldier
Russell

army headquarters, 1902-3, and during the next three years was D. A. Q. M. G. (Mobilisation), and D. A. A. G. Staff College. From 1911-14 he was on the general staff at the War Office. In the early months of the Great War he was on the general staff, becoming a brigade commander in 1915. Later he commanded the 51st division, being promoted major-general in 1916. He commanded the 4th corps in 1918, and was appointed G.O.C. Southern Command in March, 1919. Knighted in 1918, Harper was killed in a motor accident, Dec. 15, 1922.

Harper and Brothers. American firm of publishers with a branch in London. In 1812 James Harper (1795-1869), son of Joseph Harper, a farmer of Newton, Long Island, with his brother John (1797-1875), started a printing

business in New York, producing books for booksellers and publishers. Later they began publishing on their own account, and, joined by two younger brothers, Joseph



John Harper,
American publisher

Wesley (1801-70) and Fletcher (1806-77), founded in 1833 the publishing firm of Harper and Brothers. They started Harper's Family Library, a kind of serial publication, which led, in 1850, to the founding of



Harper's Magazine. This was followed in 1857 by Harper's Weekly, in 1867 by Harper's Bazaar, and in 1881 by Harper's Young People, later Harper's Round Table. In 1899 the firm was formed into a company, of which George Harvey was president. James Harper was mayor of New York City, 1844-46. See The House of Harper, J. Henry Harper, 1912.

Harper's Ferry. Town of W. Virginia, U.S.A., in Jefferson co. It stands at the junction of the Shenandoah and Potomac rivers, 55 m. N.W. of Washington, and is served by the Baltimore and Ohio rly. and the Chesapeake and Ohio canal. It has pulp and paper industries, and a college for negroes.

Harper's Ferry was the scene on Oct. 16, 1859, of a raid by John Brown (*q.v.*), the abolitionist, and a few followers, on the armoury, which was held until the following day, when it was recaptured by General Lee. In 1862 the town, together with 12,500 prisoners, was surrendered by the Federals to the Confederates under Stonewall Jackson. Pop. 706.

Harper's Magazine. Popular illustrated monthly, founded in New York, June, 1850, under the editorship of Henry J. Raymond, and published by Harper and Brothers. In 1880 it began to be issued simultaneously in London and New York. Devoted to travel, science, art, and literature, in six months it reached a circulation of 50,000, and in three years 118,000. It has consistently made a feature of the best English fiction in serial form and afforded a great stimulus to magazine illustration and to domestic short-story writing. Charles Reade, Justin McCarthy,

Cable, Stockton, and Mrs. Hodgson Burnett being among its early contributors. H. M. Alden became editor in 1869, and with him have been associated George William Curtis, whose Easy Chair causeries have attained permanent form, and W. D. Howells, who contributed the Editor's Study for many years.

Harpies (Gr. *harpýiai*, snatchers). In Greek mythology, monstrous birds with a woman's head and long claws. They were sent by the gods to torment the blind Phineus by snatching his food whenever he raised it to his lips. The expedition of the Argonauts (*q.v.*) passed the Ionian Islands where they dwelt, and Calais and Zetes, the sons of Boreas, delivered Phineus from his tormentors. The Harpies are personifications of the storm-winds, which swept away mortals at the bidding of the gods and conveyed them to the lower world.



H. J. Harpignies,
French painter
After Dubufe

Roman Campagna, a good example



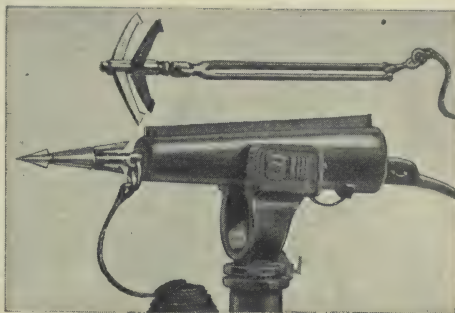
Harpsichord with double keyboard, 5-octave range.
English 17th century model

Victoria & Albert Museum, S. Kensington

of his personal and poetic style, was bought for the Luxembourg, and in 1884 his

Moonrise found its way to the same gallery. He died, painting almost to the last, on Aug. 25, 1916.

Harpocrates. Name of an Egyptian deity, identified with Horus. Worshipped among the



Harpoon. Gun with bomb-nosed harpoon. Above, harpoon with barbs extended

Greeks and Romans, and represented with a finger to his lip, he was the god of silence. See Horus.

Harpoon (Fr. *harpon*, grappling iron). Weapon used for the capture of whales. In the early days of the whale fishery the harpoon was thrown from the hand by a harpooner, rowed in an open boat, but the modern harpoon is fired by a gun. See Anthropology; Bone Implements; Whaling.

Harpsichord (Ital. *clavicembalo*, abbrev. *cembalo*; Fr. *clavecin*; Ger. *clavizimbel*). The most important of the stringed instruments with keyboards before the invention of the pianoforte. It answered all purposes in solo and chamber music which the pianoforte now serves, and also occupied a unique position in the orchestras of the 17th and 18th centuries, being employed to fill in chords according

to the figured bass, and to accompany entirely the *recitativo secco*. The essential difference between the harpsichord and the pianoforte is that in the latter the strings are struck by hammers, whereas in the former they are plucked by quills or leather plectra inserted in "jacks" or uprights, which are caused to pass the strings when the keys are depressed. The



Harpsichord. Diagram showing working of jack and string

harpsichord proper is usually shaped like the modern grand piano, but spinets and virginals and some other forms, are some times given the name. No expression, in the full sense of the word is possible on the harpsichord, but in the 18th century instruments had elaborate contrivances for securing variety, such as an extra keyboard, stops controlling plectra of various degrees of hardness, and a swell (q.v.).



Harpsichord.
Mechanism
of jack

- A. Jack.
- B. Plectrum of quill or leather.
- C. String.
- D. Damper to stop sound when jack returns to place.
- E. Dotted lines showing plectrum falling out of the way when descending.
- F. Spring, of bristle, to restore the plectrum carrier to the vertical position

Harpurhey. Suburb of Manchester. To the N.E. of the city proper, it is mainly a district covered with the smaller class of houses, factories and the like. Here is Queen's Park, while the river Irk runs through the district. Tramways connect it with the centre of Manchester. See Manchester.

Harpy. In heraldry, a fabulous creature, having the head and bust of a woman, the body, wings, legs, and tail of a vulture. See Harpies.

Harpy Eagle (*Thrasaetus harpyia*). Large and powerful bird of prey, found in Central and S. America. Its general colour is white, with a black back and tail and grey wings; on the head is a crest of feathers which when erected gives the bird a somewhat owl-like aspect. It is not a true eagle, but is placed between the eagle and the buzzard. It is slightly over a yard in length, and has a strongly curved beak and powerful claws. It is found in the forests, usually near a river or stream, and spends much of its time watching on the topmost boughs of some dead tree. It will kill animals much larger than itself, young deer, peccaries, monkeys, badgers, and sloths being among its favourite prey. It nests either in a tall tree or on the ledge of an inaccessible cliff.

Harraden, BEATRICE (b. 1864). English novelist. Born at Hampstead, London, she was educated at Cheltenham Ladies' College and London University. She first made her reputation with *Ships that Pass in the Night*, 1893, a story depending for its interest almost entirely upon its fine character studies. Other novels include *The*



Beatrice Haraden
Russell

Harrar OR HARAR. TOWN OF Abyssinia, 200 m. W. of Berbera. It is substantially built, surrounded by walls, and stands at an elevation of 6,000 ft. A large trading centre, it is noted for the coffee grown in the neighbourhood The Harrar Mts. form a S.E. extension of the Abyssinian highlands. Pop. about 50,000.

Harrier. Breed of hound used for hunting the hare by scent. In appearance it closely resembles the foxhound, but in size is intermediate between that hound and the beagle, standing about 20 ins. high at the shoulder. Probably it was derived from a small strain of foxhound, and in England most of the harriers are actually crossed with that breed. In Wales the pure-bred strain is still to be found.

The harrier may be readily distinguished from a small foxhound by its longer and more pointed ears, and it should have a rather

Fowler, 1899. Katherine Frensham. 1903; *The Scholar's Daughter*, 1906; and *Spring Shall Plant*, 1920. In *Varying Moods*, 1894, is a volume of clever short stories.



Harrier. A winning hound in a harrier and beagle show

narrower and longer head. About 150 packs are now kept in the United Kingdom, most of them in



Harrar, Abyssinia. One of the city gates

Ireland, where the sport of hare-hunting is very popular. The hunt is a somewhat slow one, but harriers will follow a cold scent that would completely baffle the ordinary foxhound. See Dog; Foxhound.

Harrier (*Circus*). Genus of hawks, including about 18 species. They are slender in form, with unusually long legs and wings, and comparatively short and small beaks. They do not frequent trees, but are usually found in marshy districts, where they prey upon fish and frogs, in addition to small birds and mammals. Three species occur in Great Britain. The hen harrier (*C. cyaneus*), so called from its habit of preying upon poultry, has now become rare. Montagu's harrier (*C. cineraceus*) was formerly common, but is now seldom seen; and the marsh harrier (*C. aeruginosus*), the largest of the three, has been almost exterminated in England. The bird takes its name from harrying small birds.



Harrier. Specimen of *Circus cyaneus*



Harpy Eagle, a large South American bird of prey



Harris, Outer Hebrides. Tarbert, the principal town of this part of the island of Lewis, from the east

Harringay. District of N. London. Built within recent years over the once open country called Green Lanes, a name now given to a main thoroughfare, it lies between Finsbury Park and Hornsey. Harringay is a variant of Haringea, Haringhea, or Haringey, by one or the other of which names Hornsey (*q.v.*) was known between the 13th and 16th centuries. The district has stations on the G.N.R. and M.R.

Harrington, EARL OF. British title borne since 1742 by the family of Stanhope. Its first holder was

William Stanhope, who belonged to the same family as the 1st earl of Chesterfield, and from whom the Earls Stanhope as well as the earls of Harrington are descended.

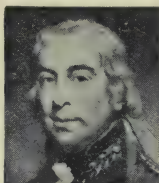
He was a noted politician in the time of George II, being ambassador to Spain, a secretary of state, lord president of the council, and lord-lieutenant of Ireland. He was made a baron in 1730 and an earl in 1742, dying in 1756. The title descended in the direct line. Charles Augustus, the 8th earl (1844-1917), was long a master of hounds. The earl's residence is Elvaston Castle, Derby, and his eldest son is known as Viscount Petersham.

Harris. Name given to the southern portion of the island of Lewis, one of the Outer Hebrides. It is about 20 m. long and of varying breadth, and is a mountainous and barren district. It forms part of the county of Inverness. The parish includes a number of adjacent islands, St. Kilda among them. Sheep are reared and wool is woven, hence the Harris tweed. The Sound of Harris, which divides it from North Uist on the S., is

the only channel of the Outer Hebrides for large vessels. It is 10 m. long and about 7 wide. Tarbert is the chief place. In 1920 much of it, about 60,000 acres, was purchased by Lord Leverhulme. Pop. 5,500.

Harris, GEORGE HARRIS, 1ST BARON (1746-1829). British soldier. Born at Brasted, Kent, March 18, 1746,

the son of a clergyman, he was educated at Westminster and Woolwich. Having entered the artillery, he was severely wounded at Bunker Hill in 1775. Proceeding to India as aide-de-camp to General Medows, he served in the first campaign against



1st Baron Harris, British soldier

After A. W. Davis

ended with the storming of Seringapatam and annexation of Mysore. In 1815 he was created Baron Harris of Mysore and Seringapatam. He died at Belmont, Kent, in May, 1829.

Harris, GEORGE ROBERT CANNING HARRIS, 4TH BARON (b. 1851). British politician and cricketer. Born Feb. 3, 1851, he was educated at Eton and Christ Church, Oxford. In 1872 he succeeded to the title. As a cricketer he was in the Eton eleven for three years (1868-70), while he played for Oxford against Cambridge in 1871, 1872, and 1874. He joined the Kent county team, and in 1875 became its captain, retaining that post until 1889. Harris played for England against Australia in a test match in 1880, and captained a team that went to Australia. As a Conservative politician, he was under-secretary for India, 1885-86, and for war, 1886-89. From 1890-95 he was governor of Bombay. Later he was associated with industrial undertakings in S. Africa.

4th Baron Harris, British politician

Russell

Harris, SIR AUGUSTUS HENRY GLOSSOP (1852-96). British actor and theatrical manager. Born in Paris, he made his first appearance at the Theatre Royal, Manchester, in 1873. In 1879 he became lessee of Drury Lane, and with Meritt and Pettitt wrote *The World* (pro-



Signature of Augustus Harris.

duced July 31, 1880), the first of the spectacular melodramas which helped to revive the prosperity of the house. He also staged pantomimes at Drury Lane on a scale of great splendour. He was sheriff of London in 1890-91, being knighted in 1891. He died at Folkestone, June 22, 1896.

Harris, SIR CHARLES ALEXANDER (b. 1855). British administrator. Born at Wrexham, June



Sir Charles Harris, British administrator

Russell

28, 1855, he was educated at Richmond School, Yorks, near where his father was a vicar, and at Christ's College, Cambridge. He entered the civil service in 1879. He helped to conduct the British case on the question of the boundary of Brazil, 1901-4, as he had previously done in that of Venezuela. In 1917 he was knighted, and was appointed governor of Newfoundland.

Harris, FRANK (b. 1856). British journalist and author. Born of Welsh parentage in Galway, he emigrated to Canada when 15. Returning to Europe, he studied in Paris, Heidelberg, Göttingen, Berlin, and Athens. In 1881 he began to write for *The Spectator*, and in 1882 became editor of *The Evening News*, which he left to edit *The Fortnightly Review*, 1888-93.

Proprietor and editor of *The Saturday Review*, 1894-98, he afterwards edited *Vanity Fair*. Shakespearean critic, playwright, and author of some notably good short stories, his works include *Elder Conklin*, 1894; *Montes the Matorador*, 1900; *The Bomb*, 1908; *The Man Shakespeare*, 1909; *The Women of Shakespeare*, 1911; *Oscar Wilde, his Life and Confessions*, 1916; and the play, *Mr. and Mrs. Daventry*, 1900.

Harris, HOWEL (1714–73). Founder of Welsh Calvinistic Methodism. Born at Trevecca, Brecknockshire, Jan. 23, 1714, he was for a time a teacher in a church school, but devoted the greater part of his life to itinerant preaching. He founded a number of societies and chapels, formed a community at Trevecca in 1752, served in the Brecknockshire militia, 1759, was a friend of the Wesleys, and wrote an Autobiography, publ. 1791. He died July 21, 1773. *See* Life, T. Jackson, 1837.

Harris, JAMES RENDEL (b. 1851). British scholar. Born at Plymouth, he was educated at the



J. Rendel Harris,
British scholar
Russell

grammar school there and at Clare College, Cambridge, of which he became a fellow and librarian. He was professor at Johns Hopkins University, Baltimore, 1882–85; at Haverford College, Pennsylvania, 1886–92; lecturer in palaeography at Cambridge, 1893–1903; professor of theology, Leiden, 1903–4; director of studies, Friends' Settlement, Woodbrooke, near Birmingham, 1903–18; and Haskell lecturer at Oberlin College, 1910. President of the Free Church Council, 1907–8, he became curator of MSS. at the John Rylands Library, Manchester, 1918.

He travelled widely in the East, where he discovered important MSS. bearing on the Bible. His numerous works include *The Teaching of the Apostles* and the *Sibylline Books*, 1886; *Some Syrian and Palestinian Inscriptions*, 1891; *The Dioscuri in Christian Legend*, 1903; *Sidelights on New Testament Research*, 1909; *Origin of the Cult of Dionysos*, 1915; *Origin of the Cult of Artemis*, 1916; *Ascent of Olympus*, 1917; *Origin of the Doctrine of the Trinity*, 1919; *The Last of the Mayflower*, 1920.

Harris, JOEL CHANDLER (1848–1908). American writer popularly known as Uncle Remus. Born at Eatonton, Georgia, Dec. 8, 1848, he worked in a printing office, studied law, and practised at Forsyth. In 1878 he joined the staff of The



Joel Chandler Harris

Atlanta Constitution, of which he was editor, 1890–1905, and to which he contributed the first of his Uncle Remus stories concerning the adventures of Brer Rabbit and Brer Fox. These stories, derived from his knowledge of negro folklore, were first collected in 1880 as *Uncle Remus: His Songs and His Sayings*. This volume had a number of successors, including *The Tar-Baby and Other Rhymes*, 1904. When he issued his first book he knew little or nothing of folklore in general, and was astonished when he began to receive letters from learned bodies asking him to explain the connexion between his stories and those of a similar kind told in other parts of the world.

He was the author of a *Life of H. W. Grady* (his predecessor as editor of *The Atlanta Constitution*), 1890, and of *Georgia from the Invasion of De Soto to Recent Times*, 1899. He died at Atlanta, Georgia, July 3, 1908. *See* Life and Letters of Joel Chandler Harris, by his daughter-in-law, Julia Collier Harris, 1918.

Harris, THOMAS LAKE (1823–1906). Anglo-American mystic. Born at Fenny Stratford, Bucks, England, May 15, 1823, he went with his parents in 1828 to the U.S.A., became a universalist, a Swedenborgian, and then a spiritualist. In 1861 he founded the Brotherhood of the New Life. Laurence Oliphant (*q.v.*), who has described him in his *Masollam*, 1886, was for a time one of his converts. He visited England 1859–61 and 1865–66, claimed that his poems were revealed to him in trances, and was the author of *Truth and Light in Jesus*, 1860; *The Millennial Age*, 1861; *The Great Republic, a Poem of the Sun*, 1867. He died at Santa Rosa, California, March 23, 1906. *See* Life, A. A. Cuthbert, 1908.

Harrisburg. City of Pennsylvania, U.S.A., the capital of the state and the co. seat of Dauphin co. It stands on the Susquehanna river, 105 m. W.N.W. of Philadelphia, and is served by the Pennsylvania and other rlys. Harrisburg is the see of a Roman Catholic bishop and contains several fine buildings, including the capitol, replacing the building destroyed by fire in 1897, the court house, the state arsenal and hospital for the insane, and the county prison.

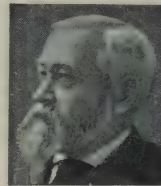
The city has a monument to the fallen in the Mexican War and another to the Dauphin co. soldiers killed in the Civil War. The capitol houses a state library of 170,000 volumes. A flourishing industrial city, its manufacturing plants in-

clude large iron and steel works, rly. workshops, machine, carriage and wagon works, and bed, mattress, boot and shoe nail, clothing, brick and tile, lumber and flour factories. Settled in 1719, Harrisburg was organized as a town in 1785, and incorporated in 1791. It became the capital in 1812. Pop. 73,275.

Harrismith. Town of the Orange Free State, S. Africa. It is 60 m. from Ladysmith and 170 m. from Durban, and stands on the river Wilge among the mountains at a height of over 5,000 ft. The chief building is the block containing town hall, public library, and market, opened in 1908. There are churches and a public park. Harrismith is a trading centre for the district and is visited as a health resort. It was occupied by the British forces on Aug. 4, 1900. Pop. 6,800.

Harrison. Town of New Jersey, U.S.A., in Hudson co. It stands on the Passaic river, 7 m. W. of Jersey City, and is served by the Pennsylvania and other rlys. On the opposite shore of the river is Newark, with which there is bridge communication. Harrison is an industrial town, and contains steel, iron, marine-engine, and elevator works, foundries, machine shops, and pump, wire, leather, lumber, and tool factories. It was settled in 1668, and incorporated in 1873. Pop. 16,160.

Harrison, BENJAMIN (1833–1901). American statesman. Born at North Bend, Ohio, Aug. 20, 1833,



Benjamin Harrison,
American statesman

grandson of President William Henry Harrison, after practising law he joined the Federal army and greatly distinguished himself in the Civil War. Senator 1881–87, he was elected president on the Republican ticket in 1888, his opponent being Grover Cleveland. During his term of office the treaty of the annexation of Hawaii was negotiated, afterwards withdrawn by Cleveland when president; the first pan-American Congress was held, the McKinley tariff introduced, and the Bering Sea seal fisheries controversy with Great Britain settled by arbitration.

Defeated in his candidature for re-election, he abandoned politics for the law. In 1899 he was counsel for Venezuela in the boundary arbitration commission set up to examine the claims of Great Britain, and took part in the Peace

Conference at The Hague, May 18, 1899. Harrison died at Indianapolis, March 13, 1901. He was the author of *This Country of Ours*, 1897, an account of the administrative organization of the U.S.A. See *Life*, Lew Wallace, 1888; *The Presidents of the United States*, ed. J. G. Wilson, 1894.

Harrison, FREDERIC (1831-1923). British author and publicist. Born in London, Oct. 18, 1831, he was educated at King's College, London, and Wadham College, Oxford. He became a fellow and tutor of Wadham, but soon settled in London.



Frederic Harrison
Russell

Called to the bar in 1858, he was a member of the royal commission on trade unions in 1867-69, and from 1877-89 was professor of jurisprudence at the Inns of Court. He was one of the founders of English Positivism (*q.v.*), and for 25 years president of the English Positivist committee.

Harrison wrote gracefully and well, if not always profoundly, on a variety of subjects, and when well over eighty was contributing to the reviews, dealing with current questions with the freshness and vigour of youth, qualities he also showed when in 1915 he wrote *The German Peril*, in which for many years he had believed. Politics constantly attracted him, although in practice he did not get beyond serving the L.C.C. as an alderman from 1889-93. He wrote *The Meaning of History*, 1862, enlarged ed. 1894; and *Lives of Oliver Cromwell*, 1888, and *William the Silent*, 1897; *Byzantine History in the Early Middle Ages*, 1900; and *Theophano*, 1904.

On literature he wrote *The Choice of Books*, 1886; *Victorian Literature*, 1895; *A Life of Ruskin*, 1902; and numerous introductions to literary masterpieces. On Positivism and ethical and religious matters generally he was voluminous, his books ranging from *Comte's Positive Polity* in 1875 to *The Positive Evolution of Religion* in 1912, with *The Creed of a Layman*, 1907, between. In 1911 appeared *Autobiographic Memoirs*. He was a noted climber, and in 1908 published *My Alpine Jubilee*. He died Jan. 14, 1923. His son Austin was editor of *The English Review* in 1910-23.

Harrison, JOHN (1693-1776). English clockmaker. Born at Foulby, Yorkshire, the son of a car-



JOHN HARRISON,
English clockmaker
After King

In 1726 he introduced an important improvement with his grid-iron pendulum, in which parallel rods of brass and steel contracting and expanding in opposite directions compensated for differences of temperature. In 1736 he produced a ship's chronometer more accurate than any hitherto made. In 1759 he made a pocket chronometer of remarkable accuracy which, fulfilling certain conditions laid down by an Act of Parliament of 1713, entitled *Longitude* Harrison, as he was called, to a reward of £20,000, which was withheld, however, by the board of longitude. It was not until 1773 that he received this money. He died in London, March 24, 1776.

Harrison, MARY ST. LEGER. British novelist. The younger daughter of Charles Kingsley, she wrote a number of novels under the pen name of Lucas Malet (*q.v.*).

Harrison, THOMAS (1606-60). English puritan and regicide. He was born at Newcastle-under-Lyme,



THOMAS HARRISON,
English Puritan
From an old print

Staffs, the son of a grazier and butcher. He became clerk to a London solicitor; in 1642 joined the bodyguard of the earl of Essex, and distinguished himself at Marston Moor. He was in command of the force that took King Charles from Hurst Castle to London, was one of the court that tried him, and signed the death warrant. During Cromwell's absence in Ireland Harrison was in supreme military command in England, 1650-51.

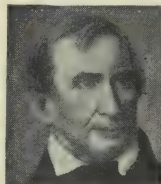
He took part in the expulsion of the Long Parliament in 1653, in which year came the division of the Commonwealth party into the Fifth Monarchy idealists under Harrison and the more practical men under Lambert. The latter gained the upper hand, and Harrison lost his offices and commission,

and twice suffered imprisonment for his loyalty to his views. He was one of the most consistent and resolute of the Parliamentarians, and though one of the seven regicides excluded from the Act of indemnity, refused to flee the country at the Restoration or to acknowledge Charles II. He was taken, tried and executed on Oct. 13, 1660. See *Thomas Harrison, Regicide and Major-General*, C. H. Simpkinson, 1905.

Harrison, WILLIAM (1534-93). English topographer. Born in London, April 18, 1534, he was educated at S. Paul's and Westminster schools, and 1556 graduated at Oxford. He became rector of Radwinter, Essex, in 1559. At the suggestion of Reginald Wolfe, printer to Elizabeth, he wrote the *Description of England*, 1577, a vividly actual and most valuable account of the country in the time of Elizabeth. Harrison was appointed in 1586 dean of Windsor, where he died in April, 1593. Much of his work is in *Shakespeare's England*, ed. F. J. Furnivall, 1877-78.

Harrison, WILLIAM HENRY (1773-1841). American statesman. Born at Berkeley, Charles City county, Virginia, Feb. 9,

1773, he entered the army and fought with distinction against the N.W. Indians. From 1801-13 governor of Indiana ter-



ritory, he was responsible for several treaties with the Indians, one of which, involving a large cession of territory to America, indirectly led to the war with Great Britain in 1812. Harrison was appointed to the command in the north-west, and his defeat of a combined force of British and Indians on the Thames, Ontario, Oct. 5, 1813, and other successes gained him a reputation during the war second only to that of Andrew Jackson.

Member of Congress, 1816-19, and senator, 1825-28, he was an unsuccessful candidate for the presidency in 1836, but was elected in 1840 in what became known as the "log-cabin and hard cider" campaign, in allusion to his once having lived in a log-cabin and to his preferring cider to beer. He died at Washington, a month after his inauguration, April 4, 1841. See *Lives of the Presidents*, W. O. Stoddard, 1888-89; *The Presidents of the United States*, ed. J. G. Wilson, 1894.

Harrison. British steamship line. It was founded in 1830, being then known as the Charente Steam-



Harrison Line
Flag, red and
white

ship Co., taking later the name of its owners, T. & J. Harrison. Its chief services are between Liverpool and ports in the Gulf of Mexico, the W. Indies, and Brazil; also to Calcutta, S. Africa, and E. Africa. From Calcutta its steamers go to the River Plate and S. Brazil. The London offices are Dock House, Billiter Street, E.C.

Harris Tweed. Textile fabric defined as tweed, hand-spun, hand-woven and dyed, and finished by hand in the islands of Lewis, which includes Harris, Uist, Barra, and their several purtenances. See Tweed.

Harrogate. Municipal borough and watering-place of Yorkshire (W.R.). It is 203 m. from London



Harrogate arms

on the N.E., G.N., and M. Rlys. Harrogate is noted for its springs, of which there are 87. There are several baths and pump-rooms, a number of hospitals and hydro-paths, as well as the Royal Hall, concert room, opera house, cinema halls, and other attractions. The buildings, which include fine churches and hotels, are all modern. The Stray is a large open space, as is Harlow Moor, and there are public gardens. The earliest spring was discovered in the 16th century. At Harlow is an observatory. Near the town are Ripon, Fountains Abbey, and Ripley Castle. The district around is known as Knaresborough Forest. Harrogate was originally two villages, Low and High Harrogate. It was made a borough in

1884. The waters are chalybeate, sulphurous, and limestone, and are the property of the corporation. During the Great War over 100,000 injured soldiers were treated here. Pop. 38,938. See Baths; Spa.

Harrow. Raking machine for shallow cultivation of the soil, differing from the cultivator in the absence of wheels. Drag-harrows, some of which require three horses, may have curved tines. Light harrows possess tines arranged on the zigzag principle, so as to cover the ground fully between them. The term seed harrow is applied to a light kind by which a coating of soil is drawn over the seeds. Chain harrows, from their flexible nature, are well suited for dealing with grass land, removing weeds, and distributing the droppings of stock. See Agriculture; Ploughing.

Harrow OR HARROW-ON-THE-HILL. Parish, urban district, and parl. div. of Middlesex, England.



Harrogate, Yorkshire. Looking up Parliament Street. Part of the Royal Baths is seen on the right

It is 10 m. by road N.W. from Hyde Park Corner, and is served by the L. & N.W., G.C., Met., District, and Bakerloo (Tube) Rlys. Situated on the summit and slopes of a hill rising abruptly 200 ft. from the plain, it has grown rapidly since the increase of rly. facilities. Harrow High Street retains much of its old character and contains an inn, the King's Head.

dating from 1553. The modern buildings include district council offices, public hall, assembly rooms, fire station, and cottage hospital. The parish church of S. Mary, founded by Lanfranc and consecrated by Anselm, 1094, was largely rebuilt in the 14th century, and restored by Sir Gilbert Scott in 1840. It contains old brasses, among them that of John Lyon, founder of Harrow School, monuments and coloured glass. Its lead-encased wooden spire is a landmark for miles around, and the view from the terrace is famous. In addition to its great public school, Harrow has several other educational establishments, including the John Lyon school.

The manor belonged to the archbishops of Canterbury as early as the 9th century, when it was known as Herges, a name replaced in the 14th century by Harewe-at-Hill, whence its present name. Cranmer in 1543 exchanged it for other lands with Henry VIII, who in 1546 granted it to Sir Edward, afterwards Lord North, in whose family it remained until 1630. Pop. town, in 1851, 4,950; in 1921 it was 19,468. See Middlesex.

Harrowby, EARL OF. British title borne by the family of Ryder since 1809. Nathaniel Ryder, M.P., a son of the lord chief justice, Sir Dudley Ryder, was made Baron Harrowby in 1776, and his son Dudley (1762-1847) was created Viscount Sandon and earl of Harrowby in 1809. This earl had been secretary of state for foreign affairs under Pitt, and lord president of the council from 1812-27. He took an important part in



Harrow Left. "Ducker," the bathing pond for the school. Right, the parish church, restored by Sir Gilbert Scott



Harrow School. 1. Interior of the Speech Room. 2. Fourth Form Room, 1611, on the panels of which many scholars afterwards famous, have carved their names. 3. The Chapel. 4. The Old School, built in 1611

Photochrom Co.

the negotiations that preceded the passing of the Reform Bill in 1832.

Dudley, the 2nd earl (1798-1882), was M.P. from 1819-47, and ended his official life as lord privy seal under Lord Palmerston. The 3rd earl was a follower of Disraeli, and interested in education. He was vice-president of



Harrow

the council, 1874-78, and president of the board of trade, 1878-80, while still Viscount Sandon. John Herbert Dudley, the 5th earl, who succeeded in 1900, was a partner in the bank of Coutts and married a daughter of W. H. Smith, M.P. His eldest son is called Viscount Sandon, and his chief seat is Sandon Hall, Stafford. The village of Harrowby is in Lincolnshire.

Harrow School. English public school. Founded by a yeoman named John Lyon, and granted a charter in 1571, it was opened in 1611 at Harrow, Middlesex, and was long a school for the poor children there. After a time, however, the master began to take pupils from other parishes, a privilege sanctioned by



Harrow School arms

the courts of law in 1809, and this, together with the increasing value of the property left by Lyon, gave it its present position. Towards the end of the 18th century it developed into a leading public school, the chief rival of Eton and Winchester. Most of the buildings are modern, these including chapel, library, and speech room, but the original room still remains.

The school numbers about 600 boys. There are eleven school houses, and a few private boarding houses. It has an upper and a lower school, but is not divided into sides; there are forms and divisions, the latter including army and navy. There are a number of entrance scholarships and some leaving scholarships to the universities. Since the time of John Farmer, Harrow has been famous for its music. Among its headmasters have been Christopher Wordsworth, George Butler, C. J. Vaughan, H. M. Butler, and J. E. C. Weldon. Its pupils have included Byron, Peel, and Palmerston.

During the Great War, 2,917 members of the Harrow School Officers' Training Corps joined the forces, of whom 619 were killed and 690 wounded. Eight won the V.C., and among other honours were two bars to D.S.O., 2; one bar to D.S.O., 16; D.S.O., 215; M.C., 252; D.F.C., 2; D.S.C., 3. Among distinguished generals from the school were Sir H. Smith-Dorrien, Sir H. A. Lawrence, and Lord Horne. There are war memorial buildings in honour of the fallen. See Byron.

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Harsova. Town of Rumania. It is situated on the Danube in the district known as the Dobruja, 15 m. S. of Braila, and 60 m. N.E. of Silistria. It came into prominence in the Great War during Mackensen's invasion of the Dobruja in the autumn of 1916. Its importance was due to the fact that here was one of the few good possible crossings of the Danube. See Rumania, Conquest of.

Hart, ALBERT BUSHNELL (b. 1854). American historian. He was born at Clarksville, Pennsylvania, July 1, 1854, and educated at Harvard and Freiburg, Germany. Appointed instructor of American history at Harvard, 1883, he occupied various professorial posts at that university for over thirty years. His historical works include Introduction to the Study of Federal Government, 1890; Epoch Maps, 1891; Formation of the Union, 1892; Foundations of American Foreign Policy, 1901; National Ideals Historically Traced, 1907; American War Manual, 1918.

Hart, SIR ROBERT (1835-1911). Civil administrator in China. Born in co. Armagh, and educated at Queen's College, Belfast, he entered the British consular service in China, 1854. Invited by the viceroy of Canton to undertake the

supervision of the customs in 1859, Hart resigned from the British consular service and by his organi-



Sir Robert Hart,
British administrator
Elliott & Fry

zation largely created the Chinese imperial maritime customs service, of which he became inspector-general in 1863. Only on two occasions, 1866 and 1878, did he

revisit Europe before his retirement from office in 1908. His thorough knowledge of the Chinese language, his absorption of the Chinese point of view, and his resolute administration for the benefit of China, won the confidence of the Chinese government, and the success of his department brought him the additional charge of the lighting of the coast and inland waterways and of the imperial post. In 1906 the Chinese government placed the customs service under a board of Chinese officials, and in Jan., 1908, Hart, nominally president of the board, received formal leave of absence and returned to England. He was created a baronet in 1893, and died near Great Marlow, Sept. 20, 1911.

Hart Dyke, Sir William (b. 1837). British politician. The son of a Kentish baronet with a title dating from 1679, he was born Aug. 7, 1837. Educated at Harrow and Christ Church, Oxford, he entered the House of Commons as a Conservative for West Kent in 1865. Returned for Mid Kent in 1868, he represented that constituency until 1885; from then until his retirement in 1906 he sat for the Dartford division. From 1868-74 Dyke was a junior whip, and when the Conservatives were in power, 1874-80, he was their chief whip. He was chief secretary for Ireland 1885-86, and from 1887-92 was vice-president of the council, i.e. minister in charge of education. He succeeded to the baronetcy in 1875. He was for some years chairman of the L.C. & D. Rly.



Sir W. Hart Dyke,
British politician
Russell

Harte, Francis Bret (1839-1902). American novelist and poet. Born Aug. 25, 1839, he went at the age of 15 to California, where he spent three years as a gold-miner and schoolmaster. He became editor of *The Weekly Cali-*

fornian, in which he published his admirable parodies, the *Condensed Novels*. From 1868-70 he edited *The Overland Monthly*, for which he wrote the inimitable verses on *The Heathen Chinese* and many of his most famous stories, includ-



Bret Harte

ing *The Luck of Roaring Camp*, *The Outcasts of Poker Flat*, *Miggles*, and *Tennessee's Partner*.

From 1878-85 he held consular appointments at Crefeld in Germany, and at Glasgow. From 1885 onwards he resided near London, producing many novels and short stories, but none quite equal to his early studies. He died at Camberley, May 5, 1902. *See* *Lives*, T. E. Pemberton, 1903; H. W. Boynton, 1905.

Hartebeest (*Bubalis*). Genus of large antelopes, found in S. Africa. The name is Dutch and is derived from the supposed resemblance of the animal to a stag. The hartebeest is one of the swiftest of the antelopes; is about 4 ft. high at the withers; is reddish brown or bay in colour, and has ringed horns which first diverge from the forehead like a V and then turn backwards at right angles. There are probably four species, with various local races. *See* *Animal*; *Antelope*.

Hart Fell. Mountain in Scotland. On the borders of Dumfriesshire and Peeblesshire, it is 6 m. N.E. of Moffat. Its height is 2,650 ft.

Hartford. City of Connecticut, U.S.A. Capital of the state and co. seat of Hartford co., it stands on

the Connecticut river at the head of navigation for large ships, 125 m. W.S.W. of Boston, and is served by the New York, New Haven, and Hartford and other rlys. Among a number of imposing buildings are the fine white marble state capitol, the municipal buildings, the city hall, built in 1796, which served as the capitol until 1879, the state arsenal, the Wadsworth Athenaeum, the Colt Memorial, and the Morgan art gallery. The churches include S. Joseph's Cathedral (Roman Catholic) and the Church of the Good Shepherd. The principal educational establishments are Trinity College and Hartford Theological Seminary.



Hartford, U.S.A. The municipal buildings

Hartford is a port of entry, but is chiefly important as an insurance centre. Its manufactures consist of typewriters, steam-engines, printing machinery, motor vehicles, sewing-machines, furniture, rubber, and hosiery.

Settled in 1633 by Dutch colonists, from 1644 to 1701 Hartford was the capital, when New Haven became joint capital, but since 1875 Hartford has been the sole seat of government. It received a city charter in 1704. Among a number of eminent writers who have lived here are Harriet Beecher Stowe, Whittier, Joel Barlow, C. D. Warner, and Mark Twain. Pop. 180,695.



Hartebeest. Specimen of *Bubalis caama*, a large South African antelope

Hartington, MARQUESS OF. English title borne by the eldest son of the duke of Devonshire. It is best known as the name of the Liberal statesman who became duke of Devonshire in 1891. Hartington is a village in the Peak dist. of Derbyshire. See Devonshire, 8th Duke of.

Hartland, HENRY ALBERT (1840-93). British painter. Born at Mallow, co. Cork, on Aug. 2, 1840, Hartland worked for a time painting stage scenery in Dublin, and made his first appearance at the Royal Academy in 1869. His best work was done in water-colour, his favourite subjects being the moorland scenery of Ireland, and N. Wales; most of his working life was spent at Liverpool. He was a frequent exhibitor at the Royal Academy, and examples of his work are to be found in the S. Kensington Museum and the Walker Art Gallery, Liverpool. He died at Liverpool, Nov. 28, 1893.

Hartland Point. Headland on the N. coast of Devonshire, England. Forming the S.W. extremity of Barnstaple Bay, it has a light-house with a revolving light visible for 17 m.

Hartlebury. Parish and village of Worcestershire, England. It is a rly. junction on the G.W.R., 6 m. S.E. of Bewdley. The castle to the W. of the village is the residence of the bishop of Worcester. The early bishops had a castle here dating from the 13th century, but the present building is mainly an 18th century one. It contains the Hurd library and some good portraits. Pop. 2,500.

Hartlepool. Municipal bor. of Durham. It stands on a headland on the coast of Durham, 247 m. from London and 18 m. from Durham on the N.E. Rly.



Hartlepool arms The chief buildings are the church of S. Hilda, dating from the 12th century, with its great tower, and the town hall, a modern building in the Italian style. The chief industries are shipping and shipbuilding. There is a large fishing trade, for which there is a commodious fish quay. The town has a service of electric tramways, connecting it also with W. Hartlepool.

Hartlepool originated round a monastery founded about 640. It obtained some municipal privileges from King John, and was a fortified place, there being still many remains of its walls and the Sandwell gate. It was made a borough in 1590. In the Middle Ages and later it had large markets and

fairs, and is now a flourishing seaport. It is governed by a mayor and corporation which derives an income from some corporate property. Gas and water are supplied by a company. Known as the Hartlepoons, Hartlepool and W. Hartlepool unite in



Hartlepool. The Promenade. Top right, Christ Church and square, West Hartlepool

sending one member to Parliament. Pop. 20,000.

Hartlepool, WEST. Co. bor. of Durham. It stands just S. of Hartlepool, being 245 m. from London, and is served by the N.E. Rly. The principal buildings are the town hall, market hall, public library, Athenaeum, and several modern churches. The borough includes Seaton Carew, a watering-place, 2 m. to the S., and Stranton with an old church—All Saints. West Hartlepool is entirely a modern seaport dating from the opening of the Durham coalfields. With Hartlepool, it has a fine large harbour, protected by a breakwater. It includes docks, which cover over 350 acres and provide facilities for shipping and shipbuilding of all kinds. Timber, iron ore, and sugar are among the imports. Large shipbuilding yards, engineering works, saw and flour mills are among the other industries. Market day, Sat. Pop. 68,923.

Hartlepoons, BOMBARDMENT OF. German naval operation in the Great War, Dec. 16, 1914. Early in the morning of Dec. 16, 1914, a German battle-cruiser squadron under the command of Vice-Admiral Hipper appeared off the N.E. coast of England and shelled the Hartlepoons, Whitby, and Scarborough, the total casualties being 150 non-combatants killed and over 400 wounded. The enemy vessels engaged were the battle cruisers Derfflinger, Seydlitz, and Moltke, Von der Tann, the armoured cruiser Blücher, and certain light cruisers and destroyers.

The bombardment began at 8.15 a.m. and lasted until 8.50 a.m. Three cruisers got within a range of 4,000 yds. The coastal batteries maintained an artillery duel throughout the engagement, and inflicted some

damage. The light cruiser Patrol and two destroyers, Doon and Hardy, also fired at the enemy.

Great damage was caused by the bombardment. Important buildings were hit, including the railway station, waterworks, gasometer, and a battery. It is estimated that 1,500 shells were fired by the German force, and 500 houses hit. The casualties were 113 killed, including 30 women and 15 children, and 300 wounded. The military casualties were seven men of the Durham Light Infantry killed and 14 men of the Durham and Yorks. Regts. and R.E. wounded.

Hartley, SIR CHARLES AUGUSTUS (1825-1915). British engineer. Born at Heworth, Durham, he became a railway engineer. During the Crimean War he served as an engineer with the Turks. This led to his appointment as engineer-in-chief to the international commission that controlled the Danube, and in 1892 he was made its consulting engineer. In 1867 he won a prize offered by the tsar for a plan to improve Odessa Harbour, and he was consulted about river and harbour prospects all over the world, including the Mississippi and Schelde, Durban, and Trieste. He was on the commission for the improvement of the Suez Canal. Knighted in 1862, he died on Feb. 20, 1915.

Hartley, DAVID (1705-57). English physician and philosopher. Born Aug. 30, 1705, and educated at Jesus College, Cambridge, conscientious scruples led him to abandon his intention of taking

Holy Orders. He became a successful physician, finally settling at Bath, where he died Aug. 28, 1757. His chief work is *Observations on Man, his Frame, his Duty, and his Expectations*, 1749. In this he explained the workings of the mind as due to certain tiny vibrations or "vibratuncules," working both inwards and outwards by way of the nerves, according as the disturbing cause was an external object or an internal impulse. The founder of the Associationist psychological school (see Association of Ideas), he attached special importance to the law of succession and simultaneity. See Hartley and James Mill, G. S. Bower, 1881.

Hartmann, Felix von (1851-1919). German cardinal and archbishop of Cologne. Born at Münster, Westphalia, Dec. 15, 1851, and ordained in 1874, he was consecrated bishop of Münster in 1911, elected archbishop of Cologne, 1912, and made a cardinal priest by Pope Pius X, May 25, 1914. He was entrusted with a special mission to the Vatican, Nov.-Dec., 1915, and in 1916 became a member of the Prussian House of Lords. He died at Cologne, Nov. 11, 1919. He was a consistent supporter of the German government throughout the Great War.



Felix von Hartmann.
German prelate.

Hartmann, Karl Robert Eduard von (1842-1905). German philosopher. Born in Berlin, Feb.



Eduard von Hartmann, German philosopher.

23, 1842, the son of a Prussian general, for five years he held a commission in the Guards-Artillery, but was forced in 1865 to retire on account of a neuralgic affection of the knee which made him a cripple for life. After a period spent in study he published, in 1869, his work on *The Philosophy of the Unconscious*, 10th ed. 1890, Eng. trans. W. C. Coupland, 1884; 2nd ed. 1904. His *Modern Psychology*, 1903, is an account of the progress of psychological study in Germany in the second half of the 19th century. His other works include *German Aesthetics* since Kant, 1886; *The Religion of the Future*, Eng. trans. E. Dare, 1886; *The Sexes Compared and Other*

Essays, Eng. trans. A. Kenner, 1895; and *The Philosophy of the Beautiful*, 1887. He died at Lichterfelde, near Berlin, June 6, 1906.

* Von Hartmann was a monist. His *Philosophy of the Unconscious* is based on an amalgamation of Schopenhauer's doctrine of will with the metaphysics of Hegel and the positiveness of Schelling. Logical thought and illogical will are merged in the unconscious, i.e. in the one and universal unconscious mind which animates the world. Unlike Schopenhauer, Hartmann denies that will can exist without willing something definite, which is thought or idea. Mind and matter are objectifications. Nature's restorative and reproductive powers are unconscious, as are reflex action and instinct. Consciousness came to life in man, and with it an idea of wretchedness to which the lesser animals are strangers. From this idea man has sought relief in a belief in worldly happiness, faith in a hereafter, and trust in the ameliorative agency of education and science. The greater part of the will perceives the inevitable misery of existence, and finally man will seek the peace of non-existence. See Pessimism, J. Sully, 1891.

Hartmannweilerkopf. Summit in the Vosges, north-west of Mulhouse, called by the French *Viell Armand*. It is 3,136 ft. high, and its possession was hotly contested by the French and the Germans during the Great War. In Jan., 1915, when the crest was held by a small detachment of French chasseurs, it was rushed by the Germans, who fortified it and beat off all efforts to retake it. On March 22, 1915, after a violent bombardment, it was attacked by three French battalions, which with severe losses captured some important trenches. On March 26 the attack was renewed, and the crest was carried.

On April 25 the Germans delivered an assault, supported by their heaviest guns, and in the evening reached the crest, capturing some hundreds of French whom they cut off. The French reserves were thrown in, but could not regain the crest, though they held positions close to it. On Oct. 15, by a sudden attack with liquid fire, the Germans seized the advanced French trenches on the western edge of the crest, but during the night were driven from them by a French counter-attack.

Late in the year the French command decided to carry out a considerable offensive. This was delayed by bad weather, and when it opened on Dec. 21 the Germans were ready for it. None the less,

the French captured the summit and took 800 prisoners, but were counter-attacked on the 22nd and driven off, and the regiment engaged was practically annihilated, losing 1,998 officers and men, the commander, General Serret, being mortally wounded. From this date the summit remained in German hands. See *Alsace*, Campaigns in.

Hartmann von Aue (c. 1170-1210). German Meistersinger. A Swabian knight, known to have joined in one of the Crusades. He was the author of two Arthurian epics, *Erec* and *Iwein*, which greatly influenced German medieval poetry, and of two religious narrative poems, *Gregorius*, a legend of the early life of Pope Gregory the Great, and *Der Arme Heinrich* (Poor Henry), a tender romance of love and faith based on the legend which Longfellow also used in his *Golden Legend*.

Hartshorn. Popular name for ammonia water, ammonium carbonate. The name originally referred to the preparation made by distillation from the antlers of the red deer, *Cervus elaphus*. The products of distillation have now been replaced by ammonia preparations. See *Ammonia*.

Hart's-tongue Fern (*Phyllitis scolopendrium*). Fern of the natural order Polypodiaceae. It is a native of Europe, N. Africa, Asia, and N. America. The rootstock is short and broad, clothed with slender brown scales; the fronds, 1 ft. to 3 ft. long, are undivided, leathery, and strap-shaped, with a heart-shaped base. The spore clusters are in thick parallel lines at right angles to the thick mid rib. See *Fern*.

Hart - Truffle (*Blaphomycetes granulatus*). Subterranean fungus of the natural order Ascomycetes.



Hart-Truffle, with clubbed stems of its parasite

capitata, which is parasitic upon the hart-truffle.

Hartzenbusch, Juan Eugenio (1806-80). Spanish dramatist. Born at Madrid, Sept. 6, 1806, of German origin, he worked as a carpenter for some years and then

It is a yellow tuber of depressed spherical form, attached to the roots of conifers, and filled, when ripe, with a purplish-brown mass of spores. Its presence beneath the soil is indicated above it by the clubbed stems of another fungus, *Cordyceps capitata*, which is parasitic upon the hart-truffle.

adopted journalism. After making several translations and adaptations of French and Spanish dramas, he produced *Los Amantes de Teruel* (Teruel's Lovers) in 1837, and led into popularity. A later success was achieved in 1845 with *La Jura en Santa Gadea*. He published critical editions of Calderon and others, and *Cuentos y Fabelas* (Stories and Fables) in 1861. He died at Madrid, Aug. 2, 1880.

Haruspices. In ancient Rome, diviners or soothsayers who drew omens from examination of the entrails of slaughtered animals. They also observed the manner in which the victim went to its death, the character of the flames in which it was consumed, and of the meal, wine, etc., used in the sacrifice; and suggested methods of propitiating the divine wrath after the occurrence of prodigies and thunderstorms. The emperor Claudius formed them into a college which existed until the 5th century.

Harvard. Lofty peak of the Rocky Mts., in Lake co., Colorado, U.S.A. One of the College peaks, it attains an elevation of 14,376 ft. above the level of the sea. It is about 110 m. S.W. of Denver.

Harvard, JOHN (1607-38). One of the founders of Harvard University. Born in Southwark, London, S.E., he was a son of Robert Harvard (d. 1625), a prosperous butcher, was baptized in S. Saviour's, Nov. 29, 1607, and educated at the local grammar school and at Emmanuel College, Cambridge. He was married, April 19, 1636, at South Malling, to Anne Sadler, of Ringmer, Sussex. In 1637 he went to America, was admitted, Aug. 6, a townsman of Charlestown, Mass., and became second minister of the church there. Dying Sept. 14, 1638, he left his books (all but one of which were destroyed by fire in 1764) and half of his estate to a college which had been chartered in 1636 in the hamlet of New Towne, which was renamed Cambridge. The college was named Harvard College.

In 1638 a granite obelisk was erected to Harvard's memory at Charlestown; in 1904 a memorial tablet was placed in Emmanuel College; in 1905 the chapel of S. John the Divine, in S. Saviour's was restored by Harvard men and renamed Harvard Memorial Chapel. Harvard's mother, Katherine Rogers, was a native of Stratford-on-Avon, and, it is suggested, was introduced to his father by Shakespeare. Harvard House, Stratford-on-Avon, built by the father of Katherine Rogers, was restored at the expense of Edward Morris, of Chicago, and opened Oct. 6, 1909



Harvard House, Stratford-on-Avon, built by Harvard's grandfather, and restored in 1909

as a rendezvous for Americans visiting England, and a repository of records, relics, etc., of the Elizabethan period. See John Harvard and His Times, H. C. Shelley, 1907

Harvard University. Senior university of the U.S.A. It was founded at Cambridge, Mass., just outside Boston, by some Cambridge graduates who gave it the name of their own seat of learning, but when some money was left to it by John Harvard the present name was taken. In 1636 the colony of Massachusetts took the first steps to set it on foot, and in 1637 the first building was opened. A board of overseers was named while in 1650 the college was made into a corporation. Nathaniel Eaton was the first president.

Various changes have been made in the constitution, but the two bodies, overseers and corporation, i.e.

president, fellows, and others, have remained, the changes having been in the direction of widening the circle of those who may be elected as overseers. Similarly the college, which began its career on somewhat narrow sectarian lines has been gradually broadened until religious tests are non-existent.

The medical school dates from 1782, and the law school from 1817, while in 1825 arrangements were made to educate those who did not wish to work for a degree, but to prepare themselves by some particular study for scientific or business life. The modern prosperity of the university was attained under the presidency (1869-1909) of C. W. Eliot. He was succeeded by A. L. Lowell. The university consists of the original Harvard College, the school of arts and sciences, and the school of business administration founded in 1908, these being in the faculty of arts and sciences. There are also the divinity school, to which Andover Theological College is affiliated; the law school, and the medical school, with the dental school set up in 1867. There are schools of engineering, mining, and applied science.

Some of the buildings, e.g. the medical school, are in Boston, while elsewhere are various scientific establishments, e.g. a school of agriculture at Jamaica Plain, an arboretum at W. Roxbury, and meteorological stations in the Andes. The school of forestry has a small forest at Petersham.



Harvard University. Austin Hall, seat of the law school founded in 1817. Top, right, Randolph Hall

The university has several large libraries, an observatory, and various museums. It issues publications of various kinds, and there are numerous social and sporting activities. The university provides university extension courses.



Radcliffe College is for women students. There are about 800 members of the staff, and over 5,000 students. Longfellow and Joseph Story were on the staff at Harvard, while Emerson, Channing, Lowell, and O. W. Holmes graduated here. See Harvard College, by an Oxonian, H. C. Hill, 1906; The Story of Harvard, H. Pier, 1913.

Harvest (A.S. *haerfest*, crop, cognate with Gr. *karpōs*, fruit, and Lat. *carpere*, to pluck). Final stage in the getting in of crops, especially cereals. Among the chief cereals, barley is allowed to remain standing until the grains are fully ripe and the ears bend down, while oats and wheat are cut before fully mature, as otherwise the grain is liable to fall out and be lost. The sickle for reaping and hand labour for making up the sheaves are now almost entirely superseded by the reaping machine and self-binder (*q.v.*). Carts may be filled up by means of a loader, and the labour of stack-building reduced by employment of an elevator. The crop is now often stored in Dutch barns, but when stacks are built in the open the principles of construction and thatching are much as given for hay (*q.v.*). It is usual to raise a corn stack from the ground on supports which prevent or hinder the access of rats and mice.

Beans are either cut and tied up in bundles mechanically or secured by a hook. Peas are cut by a hook and allowed to dry on the ground, the heaps being turned as necessary. See Australia; Chile; Egypt.

Harvest Customs. Ceremonies and celebrations associated with the completion of the gathering in of harvest. Of immemorial antiquity and world-wide distribution, they originated in worship of the nature deities associated with the growth of crops. Among the Romans the Cerealia were feasts in honour of Ceres, and many widely disseminated customs are linked



Harvest. Scenes in the harvest field. Tractor with two loaded wagons. Above, cutting oats with a Fordson tractor and self-binder

By courtesy of The Agricultural Gazette

with the classical legends of Demeter and Persephone.

One custom which, with but slight variations, can be traced among widely separated peoples, is the forming of a crude figure—sometimes merely a handful of corn decorated—which is borne in procession as a personification of the crop and made the central figure of the festivities. This custom still survives in parts of England and Scotland, where a harvest doll or kern, i.e. corn baby, is fashioned from some of the best corn into the semblance of a human figure, dressed up, and carried with the last wagonload of the harvest.

In Scotland, the last sheaf, called the Maiden or the Old Woman, according to whether it is cut before or after Hallowmas, is kept till Christmas morning, when it is distributed to the cattle to give them health throughout the next

year, or is hung up until replaced by its next year's successor. Similar customs are recorded in various European countries.

Another immemorial custom is the harvest supper given by the owner of the crop to all who help to garner it. The Jews feasted at the getting in of harvest and made a thank-offering of the first fruits, and among heathen peoples the heads of families feasted on terms of equality with their servants. In England the supper was the crowning celebration of the harvest home, and from the fact that a goose was the principal dish on these occasions the custom of eating a goose on Michaelmas Day originated. See The Golden Bough, J. G. Frazer, 1917, etc

Harvestman. Popular name for a group of spiderlike arachnids (*Phalangium*), common in autumn. They are distinguished from spiders by absence of a waist and their remarkably long legs. See Arachnida.

Harvest-Mite, HARVEST-TICK or HARVEST-BUG. Name given to the larvae of a group of mites of the family Trombididae. The common harvest-mite, which is covered with scarlet hairs, is found in vast numbers on grass and low herbage in summer and autumn. It bores under the thin skin, usually of the legs, of man and other animals. As it reaches the adult stage, it leaves its host and drops to the ground,



Harvest-Mite, greatly enlarged

where it preys upon minute insects. The best remedy is to paint the affected spot with tincture of iodine, turpentine, or ammonia.

Harvest Moon. Nearest full moon to the autumnal equinox, Sept. 23. Owing to the position of the moon's path with respect to the horizon, it rises nearly at the same time on successive evenings. The succession of moonlight evenings occurring at this time of the year is taken advantage of by farmers to gather their crops, and hence the name. *See Moon.*

Harvey, GABRIEL (c. 1550-1630). English scholar. Born at Saffron Walden, son of a well-to-do rope-maker, he had a distinguished career at Cambridge. He advocated the use of classical metres in English verse, was the friend of Spenser (he was the Hobbinol of *The Shepherd's Calendar*), and carried on a bitter quarrel with Thomas Nashe (q.v.). He died at Saffron Walden, Feb. 11, 1630. *See Marginalia*, G. Harvey, coll. and ed. G. C. Moore Smith, 1913.



Gabriel Harvey,
English scholar
From an old print

Harvey, SIR GEORGE (1806-76). Scottish painter. Born at St. Ninian's. Stirlingshire, he studied at the Trustees' Academy, Edinburgh. He was an original associate of the Scottish Academy, 1827, becoming a full member in 1829, and president in 1864. He died at Edinburgh, Jan. 22, 1876. Scottish genre, portraits, and landscapes were treated by him. *See Covenanters*; *Drumlog*.



Sir George Harvey.
Scottish painter

Harvey, GEORGE BRINTON McCLELLAN (b. 1864). American journalist. Born Feb. 16, 1864, he was educated at Peacham academy, Vermont, and in 1882 became a reporter on *The Springfield Republican*. In 1886 he joined the staff of *The New York World*. He became managing editor of *The New York World* in 1891, and in 1894 turned his attention to railways, being constructor and president of various electric undertakings 1894-98. He bought *The North American Review* in 1899, which he edited for over 20 years. Harvey was president of the publishing

firm of Harper and Bros., 1900-15, and founded and edited *Harvey's Weekly*. In April, 1921, he was appointed U.S. ambassador to London, resigning Oct., 1923.

Harvey, SIR JOHN MARTIN (b. 1867). British actor. Born at Wyvenhoe, Essex, June 22, 1867, he made his first appearance in 1881 at the Court Theatre, and in 1882 was engaged by Henry Irving, remaining in his company until 1896, and playing leading parts on tour. In 1897 he played in *Hamlet* with Forbes-Robertson, and in 1898 took over the management of *The Lyceum*, producing in Feb., 1899, *The Only Way*. As Sydney Carton he became famous.



Sir Martin Harvey.
British actor

In 1900, with Mrs. Campbell, he revived *Pelléas and Mélisande* at *The Royalty*, and in 1905 he produced *Hamlet* at *The Lyric*. *The Breed of the Treshams*, produced in 1903 at the Kennington Theatre, was revived in 1907 and 1915. In



Sir Martin Harvey as Sydney Carton
in *The Only Way*

1912 he appeared at Covent Garden as *Oedipus* in *Oedipus Rex*. He was knighted in 1921.

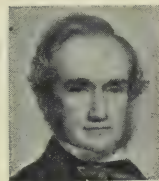
Harvey, WILLIAM (1578-1657). English physician, discoverer of the circulation of the blood. He was born at Folkestone, Kent, April 1, 1578, and educated at the King's School, Canterbury, Caius College, Cambridge, and the university of Padua, taking his doctor's degree in physic at Padua and at Cambridge in 1602. He settled in practice in London, and in 1607 became fellow of the College

of Physicians, and in 1609 physician to St. Bartholomew's Hospital. In 1615 he was appointed Lumleian lecturer to the College of Physicians, and the next year first put forward his theories about the movement of the heart and blood.

Harvey had been appointed physician to James I in 1618, and in 1632 he received the same honour from Charles I, who was his constant and helpful patron. He accompanied the king on one visit to Scotland, was with him at the battle of Edgehill, and followed him to Oxford, where he remained for three years, and was made warden of Merton College. He returned to London in 1646, and pursued his investigations into the subject of generation which resulted in the publication, in 1651, of his *Exercitationes de generatione Animalium*, his only other work of first importance. He died in London, June 3, 1657, and was buried in the family vault at Hempstead, Essex.

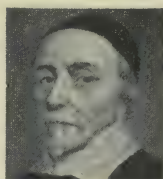
Harvey, WILLIAM (1796-1866). British wood-engraver and designer. Born at Newcastle-on-Tyne, July 13, 1796, he studied under Thomas Bewick, and later, under Benjamin Haydon in London. About 1822 he gave up engraving for design, and produced some facile illustrations for Northcote's *Fables*, Lane's *Arabian Nights*, and Hood's *Eugene Aram*. He died at Richmond, Jan. 13, 1866.

Harvey, WILLIAM HENRY (1811-66). British botanist. Born at Summerville, Limerick, Feb. 5, 1811, he went, after a youth spent in business, to S. Africa, and became colonial treasurer at the Cape. Returning to Ireland on account of his health, he was appointed keeper of the Herbarium at Trinity College, Dublin. In 1846 he began the publication of his important work on seaweeds, the *Phycologia Britannica*. In 1849



William H. Harvey
British botanist
After Maguire

he paid a long visit to the U.S.A., and accumulated material for his *Contributions to a History of the Marine Algae of N. America*, 1852-53. His later works were

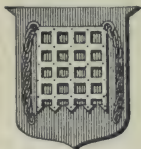


Will. Harvey
After C. Jansen

Phycologia Australica (1858-63), *Thesaurus Capensis* (1859-63), and *Index Generum Algarum* (1860). He died at Torquay, May 15, 1866.

Harvey Process. Process invented by H. A. Harvey, an American engineer, for hardening steel plates. It consists essentially in heating the plate in a furnace while it is covered all over the surface to be hardened with charcoal or some other form of carbonaceous material. The operation may require to be maintained for several days. The carburised face is then further treated by chilling by a water spray. Steel plates so harveyised have proved extraordinarily resistant to penetration by shot. *See Armour; Metallurgy; Steel.*

Harwich. Seaport and borough of Essex. It stands on a peninsula at the mouth of the estuary of the Orwell and the Stour, 70 m. from London. It is served by the G.E. Rly., which has made it the port for its continental traffic, and from here steamers go to the



Harwich arms

Hook of Holland, Amsterdam, Rotterdam, Antwerp, Hamburg, Copenhagen, and elsewhere. The chief buildings are the church of S. Nicholas and the town hall. The



Harwich, Essex. The pier used by the coasting passenger steamers

harbour, a very safe one, is protected by breakwaters. There are modern docks. Passengers go from Parkstone Quay, 1 m. up the Stour. Other industries are fishing, shipbuilding, and the making of fertilisers and cement. It is a yachting centre.

Harwich became a borough in 1319, and from 1604 to 1867 was separately represented in Parliament. By charter it was allowed markets and fairs. As a port it was flourishing in the 14th and 15th

centuries. Its position made it strategically important, and it has long been fortified. Martello towers exist, and there are modern defence works at Landguard Fort on the Suffolk side, at Shotley Point and elsewhere round the port. During the Great War Harwich was an important naval base. A train ferry service to Zeebrugge was inaugurated, 1924. The watering-place of Dovercourt is within the borough. Pop. (1921), 13,036

Harwood, GREAT. Market town and urban dist. of Lancashire. It is 5 m. N.E. of Blackburn, on the L. & Y. Rly. The chief industries are the manufacture of cotton and the mining of coal in the neighbourhood. The council owns the market and a cemetery, while gas and water are supplied by Accrington. Market day, Fri. Pop. 13,800.

Harz. Mountain range of N. Germany lying between the Leine and the Saale and crossed by the waterparting between the Weser and the Elbe. The existing heights are the remains of an ancient and more extensive system of fold mountains which were uplifted during the period when the coal measures were under formation.

The Harz consists of carboniferous and older rocks with intrusive granites, the Brocken, 3,730 ft., the highest point, being the largest granite mass. N. of the range outlying hills lead to the lowland of N. Germany; the drainage is by the Ocker and other streams to the Weser; to the S. lies the fertile "Golden Meadow," the valley of the Helme, tributary to the Saale.

The range, 56 m. by 20 m., comprises the Upper Harz, a thickly forested district where at Clausthal and other centres silver is mined at depths below sea level, and the Lower Harz where agriculture prevails on land cleared of the forest, and copper is mined at Mansfeld, the chief German centre for this mineral. The whole region, which is associated with legendary occurrences, e.g. the spectre of the Brocken (*q.v.*), is visited by tourists and invalids, the valley of the Bode being noted for its mountain scenery.

Harzburg. Town of Brunswick, Germany. It is 27 m. from Brunswick, and lies at the entrance to the Radan valley, along the sides

of which it is built, and which affords pleasant promenades. It is a popular resort for visitors to the Harz, and for invalids. The town itself, which has saline baths and springs, has few objects of interest, but its surroundings are fine, and from the Grosser Burgberg, topped by a ruined castle, a good view is obtained. Pop. 3,500.

Hasa or **EL HASA.** District on the W. side of the Persian Gulf. A low-lying plain, 350 m. long, it is bounded N. by Koweit, whose sheikh is independent under British protection, and S. by the peninsula of El Kater. Off the coast are the Bahrein Islands (*q.v.*). Before the Great War the Turks claimed the sovereignty of Hasa, and had some troops in El Hofuf, its capital, but its various Arab chiefs were virtually independent. Quantities of dates are grown. Area, 31,000 sq. m. Pop. 150,000.

Hasan (625-669) and **HUSSEIN** (629-680). Sons of Ali, adopted son of Mahomet and Fatima, the Prophet's daughter. After their father had been fatally stabbed in the mosque at Kufa, 661, the brothers lived in retirement at Medina. Hasan is believed to have been poisoned by his wife, Hussein, who married a daughter of Yazdigerd, the last Sassanian king of Persia, was slain in battle at Kerbela when on his way to respond to a popular call to the caliphate. The brothers are venerated by the Shiites as martyrs. *See Ali; Mahomedanism; Shiites; consult also The Miracle Play of Hasein and Hosein, Lewis Pelly, 1879; Persian Passion Play, in Matthew Arnold's Essays in Criticism, 1st series, new ed. 1911.*

Hasdrubal or **ASDRUBAL.** Carthaginian soldier. Left in Spain by his brother Hannibal (*q.v.*), when setting out on his expedition against Rome in 218 B.C., Hasdrubal carried on the war against the two Scipios, whose object it was to prevent him from reinforcing Hannibal. In 208 he crossed the Pyrenees, and in 207 the Alps, and reached Italy with his army. It was defeated, however, at the battle of the Metaurus, Hasdrubal himself was killed, and Hannibal was informed of the disaster by his brother's head being thrown into his camp.

The name of Hasdrubal was borne by several other eminent Carthaginians, the most distinguished of these being the son-in-law of Hamilcar Barca (*q.v.*). As commander of the Carthaginian forces in Spain, he was responsible for the treaty fixing the boundary between the Carthaginian and Roman territory. *See Carthage.*

Hase, KARL AUGUST VON (1800–90). German Protestant theologian. Born at Steinbach, Saxony, Aug. 25, 1800, he was educated at Leipzig and Erlangen. He was tutor at Tübingen, 1823, and after being a political prisoner for ten months, during which period he wrote a novel, *Die Proselyten*, 1827, he went to Dresden. In 1828 he became professor of philosophy at Leipzig, and was from 1830–83 professor of theology at Jena, where he died Jan. 3, 1890.

He was the author of numerous works on theological questions, church history, ecclesiastical law, etc. His *Life of Jesus* first appeared in 1829, reached a 5th ed. in 1865, was rewritten in 1876, and translated into English in 1881. His *History of the Christian Church*, 1834, reached a 12th edition in 1900, and appeared in English in 1855. He also wrote a handbook of Dogmatics, 1826, *Life of S. Francis*, 1856, a book on Protestant polemical theology, 1863, and a *Life of S. Catherine of Siena*, 1864; and some lectures on Church History, 1880.

Haselden, WILLIAM KERRIDGE (b. 1872). British cartoonist.



W. K. Haselden,
British cartoonist
Hopph

Born at Seville, Spain, he began his career as a clerk at Lloyd's, London, but devoted his leisure to sketches and caricatures for publication. About 1902 he took up drawing professionally, and in 1904 was appointed cartoonist to *The Daily Mirror*. He has contributed caricatures of theatrical celebrities to *Punch* since 1905.

Haselrig, SIR ARTHUR (d. 1661) English Parliamentarian. He was the eldest son of Sir Thomas Haselrig, Bart. (d. 1629), of Noseley, Leicestershire, and was one of the Five Members whose attempted arrest precipitated the Civil War. Largely influenced by Pym, he became prominent among the Puritans, and raised a troop of cuirassiers for the earl of Essex's army. He was a firm upholder of the Parliament and opposed Cromwell's protectorship. In 1647 he was governor of Newcastle. Imprisoned in the Tower on the Restoration, he died there, Jan. 7, 1661. The name is variously given as Hesilrige and Haslerig. In 1818 the family formally changed the name to Haslerigg.

Hashish (Arab., herbage). Section of *Cannabis Indica*, or Indian hemp. Made from the dried

leaves and small stalks of the plant, it is a drug which produces a mild, pleasurable sense of intoxication. It is also a narcotic and is smoked, drunk, or eaten. The word assassin is derived from hashish. See Hemp.

Haslar Hospital.

Royal Naval hospital at Gosport, Portsmouth. It was opened in 1753, having taken eight years to build. The hospital is a fine medical library



Haslemere, Surrey. The High Street, looking north



Once upon a time there was a Kaiser named William who thought it would be great fun to go and kick the peaceful world. So he got his little son Willie to go and kick with him. But when they kicked, the world stuck out cruel bayonets, and hurt the toes of the Willies so much that they went away crying. And now they think that world-kicking is a horrid game

W. K. Haselden : The first of the Big and Little Willie series of cartoons which appeared in *The Daily Mirror* during the Great War

The buildings and grounds cover 57 acres. Haslar was once the largest brick building in the world, and it still remains Britain's principal naval hospital, with accommodation for 1,116 patients. It is administered by a surgeon-general, and the naval medical school is located in it. Attached to

the original building was a home for naval pensioners, but owing to the growth of the navy this became later part of the hospital proper. Additions were made from time to time, one fine block of buildings being opened in 1917.

Haslemere.

Market town and parish of Surrey. It is 13 m. from Guildford and 43 m. from London, with a station on the L. & S.W. Rly. It stands in a valley between Blackdown Hill and Hindhead; around is some of the finest scenery in Surrey. There is an old church dedicated to S. Bartholomew, and an educational museum. Haslemere was a town at the time of Domesday



Haslar Hospital, Portsmouth. The main entrance

Book, and from 1582 to 1832 sent two members to Parliament. About 1887 its attractions became known, and soon a number of literary and other persons made their homes here. Near is Aldworth, the residence of Tennyson and where he died. Pop. 3,500.

Haslingden. Mun. bor. and market town of Lancashire, England. It is 19 m. N.W. of Manchester on the L. & Y Rly. Cotton, silk and woollen goods are manufactured, and there are also coal-mines, stone quarries, and iron foundries. Accrington and Lawtenstall supply electricity in bulk for both lighting and power purposes. Water is obtained from Bury. Pop. 18,700.

Hasp. Name applied to the hinged part of a metal fastening for a door, box, or book cover. The common form for a door has a loop or slot, which is passed over an adjoining staple and secured by a pin or the link of a padlock.

Haspe. Town of Germany, in the Prussian province of Westphalia. It is 10 m. N.E. of Barmen and 3 m. from Hagen, with which it is connected by tramway as well as by rail. It stands where the rivers Ennepe and Haspe unite. On the Westphalian coalfield, it is a modern industrial town, the chief works being iron-foundries, rolling mills, and other establishments for the manufacture of iron, steel, and brass. Pop. 23,500.

Hassall, JOHN (b. 1868). British artist. Born at Walmer, and educated at Heidelberg, he began life on a farm in Manitoba; then studied art at Antwerp, and at Julian's, Paris. Specialising upon poster work, he rapidly attained a leading position in this genre. He also produced many humorous sketches and



Hassall
Russell

designs in black-and-white, and several elaborate compositions in water-colour.

Hassan. District, subdivision, and town of India, in the state of Mysore. It is traversed by the W. Ghats and the Hemavati river. Coffee and cereals are raised for export. The minerals include felspar, kaolin, and quartz. Scattered throughout the district is a large number of archaeological relics. Hassan, the capital of the district, is 64 m. N.W. of Mysore. Area of district, 2,666 sq. m. Pop. district, 580,200; subdivision, 98,640; town, 7,460.

Hassan Ibn Sabbah (d. 1124). Persian sectary. Son of a prominent member of the Shiite sect in Khorasan, he had to leave Persia and later Egypt after unsuccessful political intrigues at the courts of Malik Shah and the caliph Mostansir respectively. His strong personality attracted a number of followers, to whom he taught his peculiar doctrines, and he thus founded the powerful Society of Assassins (*q.v.*). In 1090 he established their headquarters at Alamut, a strong mountain fortress of Persia, whence he came to be known as Sheikh-al-Jabal, or the Old Man of the Mountain. Among his victims were his own sons.

Hasse, EVELYN RENATUS (1856–1918). Bishop of the Moravian Church. He became the leading minister of the Moravian Church in the British Isles. From 1906 to his death he was president of the directing board of the Moravian Church. He was consecrated as bishop of the Moravian Church in 1904. He was president of the Christian Endeavour Society, and rendered valuable services to the Evangelical Union, the Bible Society, and foreign missions. His book, *The Moravians*, helped to make the work of the Moravian

Hasselt. Town of Belgium, capital of the prov. of Limburg. It lies in flat country on the river Demer, about 18 m. W.N.W. of Maestricht. It is an important rly. centre, but it has few industries. A septennial kermesse on Assumption Day has several features of interest to students of folklore. At Hasselt the Belgians were defeated by Dutch troops on Aug. 6, 1831. Pop. 17,000.

Hastinapur. Ruined city of the United Provinces, India, in Meerut district. It stands on the Burh Ganga, or former bed of the Ganges, 22 m. N.E. of Meerut, and was the capital of the great Pandava kingdom. It was demolished by a flood.

Hastings. County borough, market town, and watering-place of Sussex, England. It is also one of the Cinque Ports, and the borough includes St. Leonards. It is 62 m. S.E. of London on the S.E. & C. Rly., and is also served



Hastings. Ruins of the castle. Top right, the old town from the East Hill

Church known in Britain. He died in June, 1918. See Moravia.

Hasse, JOHANN ADOLPH (1699–1783). German composer. Born at Bergedorf, Hamburg, March 25, 1699, he studied singing in Naples and sang for a time as a tenor. Turning to composition, he wrote over a hundred operas, including *Antigonus* and *Artaxerxes*, and for many years lived at Dresden as director of the opera belonging to the elector Augustus of Saxony. He died in Vienna, Dec. 16, 1783.

West Hill soon after 1066, the churches of All Saints (11th century), S. Clements (13th century), and some underground passages or caves. Ecclesbourne Glen and Fairlight Glen are near. S. Mary's R.C. Church was largely built by Coventry Patmore. The Brassey Institute contains an excellent



Hastings arms

by the L.B. & S.C. Rly. From Hastings proper to St. Leonards in the W. is a fine promenade, 3 m. in length. Several pleasure grounds include Alexandra Park, 75 acres in extent.

The objects of interest include the remains of a castle built on



Battle of Hastings. Map of the surrounding country showing the routes followed by Harold and William. Inset, plan of the battlefield

library; a school of art and a museum are housed in the building. There is a town hall, grammar school, technical schools, hospitals, etc. Fishing is the chief industry. At the E. end between the East and West Hills lies the fishing quarter, and there is a fish market. There is a cricket week in August. Hastings was a town in Anglo-Saxon times, and in the Middle Ages was a flourishing port. It was made a borough in 1589, and returned two members to Parliament from 1366 to 1885, since when it has sent one. Pop. 66,496.

Hastings. Town of North Island, New Zealand. It is 12 m. by rly. S.W. of Napier, in Hawke's Bay dist., and has refrigerating and fruit-canning works. Pop. 7,918.

Hastings, BATTLE OF. Fought Oct. 14, 1066, between the Normans under William, called after this victory the Conqueror, and the English under Harold II (*q.v.*). It took place on a hill, to which a later writer gave the name of Senlac, about 6 m. from Hastings.

Harold had just beaten the Norwegians at Stamford Bridge when he heard that William had landed at Pevensey. Rapidly marching southwards, he chose a position on which to meet the invader. His own bodyguard, the huscarls, men heavily armed with axe and shield, were the nucleus of his army, but he had also with him men of the fyrd, imperfectly armed and trained. All fought in a number of massed groups, and around each was a ring of stakes driven into the ground to impede horsemen.

The archers, the footmen, and finally the horsemen attacked the English, but could make no im-

pression on their closed ranks. Then some of Harold's auxiliaries left their places to follow a few who were routed, and William ordered some of his men to feign flight. The English ran down the hill after the Normans, who turned round and cut them to pieces. But on the hill the huscarls stood firm around their king. As night came on the archers began to shoot into the air. Then, with the arrows falling about their faces, the English gave way, and the Normans got in among them. Fighting to the last, Harold and his two brothers were killed, and his army was totally destroyed.

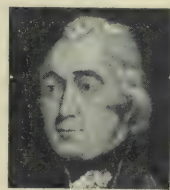
Hastings, BARON. English title, now borne by the family of Astley. Sir John Hastings, a great man in the time of Edward I, was the first holder. In 1290 he claimed the crown of Scotland. Laurence, the 3rd baron, was made earl of Pembroke in 1339. John, the 3rd earl, was killed in a tournament in 1391, and the barony remained in abeyance until 1841. It was then given by the House of Lords to a descendant of the Hastings family, Sir Jacob Astley. He ranked as the 16th baron, and from him the present holder is descended. The family seat is Melton Constable, Norfolk.

This barony must be distinguished from another barony of Hastings, one held by the marquess of Hastings until 1868. It then fell into abeyance between the sisters of the last marquess, but in 1920 was claimed by the countess of Loudoun. See Loudoun, Earl of.

Hastings, MARQUESS OF. British title borne by the family of Rawdon-Hastings from 1817 to 1868. The first holder was the soldier, Francis, earl of Moira, who was made Viscount Loudoun, earl of Rawdon and marquess of Hastings in 1817. He married Flora Campbell, in her own right countess of Loudoun, and their son, Francis George (1808-44), inherited titles from both parents. The 3rd marquess was his son, Pauly, and the 4th was another son, Henry. The latter gained a good deal of notoriety on the turf and in society,

dying without children, Nov. 10, 1868. The titles that had come down from his grandfather, including the marquessate of Hastings, then became extinct, but those of his grandmother passed to his sisters. In addition the marquess had inherited the baronies of Botreaux, Hastings, Hungerford, and Grey de Ruthyn. The estates passed to his elder sister, the countess of Loudoun. The seats were Donington Hall, Leicestershire, and Loudoun Castle, Ayrshire. See Loudoun, Earl of.

Hastings, FRANCIS RAWDON. Hastings, 1st MARQUESS OF (1754-1826). British soldier and admin-



After M. A. Shee, R.A.

istrator. Born Dec. 9, 1754, he was the son of Sir John Rawdon, an Irish baronet, afterwards made earl of Moira. Educated at Harrow and University College, Oxford, he entered the army in 1771.

He served in the American War of Independence, commanding a volunteer force of Irishmen, and in 1783 was made a baron. In 1793 he became earl of Moira.

In 1813 Moira was appointed governor of Bengal and commander-in-chief in India. He remained there until 1823, his term of office being marked by the long war against the Gurkhas of Nepal and the successful campaign against the Pindaris and Mahrattas. He was made marquess of Hastings in 1817. Hastings resigned in 1821, but did not leave India until 1823. His policy was disliked by the E. India Co. From 1824-26 he was governor of Malta, and he died Nov. 28, 1826. See Life, Ross of Bladensburg, 1893; Private Journal, ed. Marchioness of Bute, 1858.

Hastings, JAMES (1855-1922). Scottish divine and theological writer. Born at Huntly, Aberdeenshire, and educated at the grammar school, university, and Free Church divinity hall, Aberdeen, he was ordained minister at Kinneff, Kincardineshire, 1884, and was minister of Willison Church, Dundee, 1897-1901, and of S. Cyrus Church, Dundee, 1901-11. He started The Expository Times, and edited it from 1889-1919. He compiled a Dictionary of the Bible, 5 vols., 1898-1904, single vol. 1908; Dictionary of Christ and the Gospels, 2 vols., 1906-7; and Encyclopaedia of Religion and Ethics, vols. 1-10, 1908-19. He died Oct. 15, 1922.

Hastings, WARREN (1732-1818). British statesman. Born at Churchill, Oxfordshire, Dec. 6,



Warren Hastings

After T. Kettle

1732, he was the son of Peniston Hastings, the rector of the parish. His mother died a few days after his birth, his father went abroad, and the child was looked after by his grandfather, another Peniston Hastings. He was educated at Churchill, at a school at Newton Butts, and finally at Westminster, where he was a king's scholar. In 1750 he became a writer in the service of the E. India Co.

In 1756 Hastings joined the force that under Clive recovered Calcutta from Suraj-ad-Dowlah. He served Clive well in some diplomatic work, and after Plassey was made president at Murshidabad, where he worked in close harmony with his chief, and did good service to the E. India Company. In 1761 he became a member of the council of Bengal, and returning to Calcutta, he passed three years mainly in disputes with his colleagues. He resigned in 1764.

After four years in England, Hastings returned to India in 1768, as second member of the council of Madras, remaining there until transferred to a like position in Bengal. In 1772 he became president of the council of Bengal, and in 1773 he was named governor-general of India under Lord North's regulating Act. The government was controlled by a council of five, and three of these members, led by Sir Philip Francis, habitually thwarted the governor-general. Despite this antagonism, Hastings reorganized the administration of Bengal, laying the foundations of the Indian civil service. The blunders of the British authorities in Bombay and Madras forced him into wars with the Mahratta powers, and with Haidar Ali; the boldness with which he faced these emergencies saved the British power in India from destruction. After the departure of Francis, the council acted somewhat more harmoniously, and Hastings had a less difficult time in the years that preceded his recall in 1785.

In the straits to which he was reduced, by want of funds and lack of effective support from the Company, Hastings adopted methods which would have been a matter of course for Orientals, but which

Europeans cannot employ without risk of censure. Public opinion in England was stirred against him by his chief enemy, Francis, whom he had wounded in a duel in Aug., 1780. Soon after his return he was impeached. The trial, which began in 1788, aroused tremendous interest. It lasted over seven years, the chief charge against Hastings being that he had hired out British troops to exterminate the Rohillas, had robbed the begums of Oudh, and was responsible for the judicial murder of Nuncomar. The House of Lords unanimously acquitted him on every charge, and the verdict of successive governors-general was emphatically in his favour. He was ruined financially by the trial, but the Company made tardy reparation by conferring a pension on him, and before his death the House of Commons acknowledged formally his distinguished services

to Britain. He died at Daylesford, Aug. 22, 1818, and was buried in the church there. See India.

Bibliography. The Story of Nuncomar and the Impeachment of Sir E. Impey, Sir J. F. Stephen, 1885; Warren Hastings, L. J. Trotter, 1890; The Administration of Warren Hastings, Sir G. W. Forrest, 1892; The Rise of the British Dominion in India, Sir A. C. Lyall, 1893; Warren Hastings, Sir A. C. Lyall, 1899; and Macaulay's Essay.

Hastings Beds. Series of sandstones, sands, clays, and layers of limestone, forming the lower part of the Wealden series in Kent, Surrey, and Sussex. Their greatest thickness is 1,000 ft., and they contain fossil remains.

Haswell. Parish and village of Durham, England. It is 9 m. S. of Sunderland on the N.E. Rly. Coal-mining is the chief industry. Pop. 5,860.

HAT AND HAT-MAKING

M. E. Brooke, Writer on Fashion

There are supplementary articles on the various special forms of hat, e.g. Panama, Sombbrero. See the articles on other items of dress; also Cap and Costume, with their colour plates

A hat is a covering for the head, distinguished from the cap by having a brim. This distinction, however, grew up but slowly, and in early times there were few variations of head-dress, the first being undoubtedly the skin of some animal worn round the head for protective purposes.

The modern hat has been traced to the Greeks, who wore the *petasos*, a low-crowned, wide-brimmed felt one, tied under the chin or in other ways. A few Romans wore something of this kind, and also the *causia*, of Macedonian origin, a hat of felt with high crown and broad brim. The *pileus* was a close-fitting cap. Felt hats of somewhat similar shape were worn by the rich in England in the 12th century.

In the 14th century, men in England wore tall felt hats with coloured upturned brims. The 15th century saw somewhat similar hats, and then came the flat hat, usually of velvet, popular in Tudor times. The best known example of this is to be seen in Holbein's portrait of Henry VIII. The pot hat, trimmed with a plume in front, appeared in the reign of Elizabeth. Later came the high-crowned, broad-brimmed Puritan hat, introduced early in the 17th century; and in the time of Charles II a big, low-crowned hat with a profusion of feathers was the hat worn by the typical cavalier.

The next important innovation was the three-cornered or cocked

hat, which lasted until the French Revolution. Then, about 1792, men began to wear beaver hats resembling the modern top-hat, but ornamented with strings and tassels. About 1840 the modern silk hat was first worn in England.

Straw hats were introduced into Britain quite early, but their modern popularity only dates from about 1850, when the so-called bowler hat, made of hard felt, also came into vogue. In the 20th century the silk hat fell considerably out of fashion, being reserved more and more for ceremonial occasions, and soft hats known as the Homburg and Trilby came into favour.

Clerical Hats

The clergyman's hat of soft felt has a long ancestry, and the hats of bishops and deans are survivals of a bygone fashion. The red hat of the cardinal was bestowed about 1250 by Innocent IV, that colour symbolising the cardinals' willingness to shed their blood for the Church. A feature of recent years is the general wearing of hats by women, the bonnet having been superseded. They are of innumerable shapes, and range from a simple hat of straw, trimmed only with a plain ribbon, to the most elaborate devices of millinery.

HAT-MAKING. The main types of hats in civilized countries are also either made of felt or of straw, in silk and velour, etc. The silk hat has a foundation normally of several layers of calico stiffened with shellac. The foundation is



Hat and Hat-making. 1. Combing the felt of a velour. 2. Laying a seam in a silk hat. 3. Sewing on the brims of straw hats. 4. Scratching felt for imitation velours. Respirators are necessary on account of flying hairs and dust. 5. Blocking felt hats. 6. Making and covering bodies of the Sandringham hat

carefully shaped to suit the prevailing fashion by means of wooden blocks, and the silk plush, whence the name and glossy appearance are derived, is skillfully sewn on.

Felt hats are made by dropping rabbit fur, wool, or mixture of fur and wool upon a spinning-cone, and by playing upon the cone jets of acidulated water, causing the hairs to felt together. When the process has proceeded far enough, the V-shaped hood thus formed is removed and "planked" by hand or machine to consolidate the felting. The hood is rubbed for this purpose between grooved surfaces, and the felt is then firm enough to be dyed and prepared by successive stages to the shape in which the hat is to be worn. The hard felt or bowler hat is stiffened in a spirit solution of shellac. The soft felt hats are stiffened only with water-paste.

In England the hatting industry is carried on most largely at and near Stockport and in Nuneaton. There is strong competition from felt hats made in Italy.

Straw Hats

The making of straw hats is an industry that has never been systematically organized in England, although none has increased more rapidly and in none has the character changed more. Formerly the straw plaits from which hats are formed were made at Luton, Dunstable, and other English centres, but now the majority are

imported, although certain coarse straw plaits are still made in England. Braids of fine straw mixed with bright artificial silk are made in Leek for the use of hat manufacturers, and great possibilities in hat decorations are anticipated by the manufacture of this material.

The best plaits are those from corn straw, and next come those from hemp. Makers still depend on Switzerland for the best picot tagel, which is of hemp extraction. There is, however, an inferior quality which comes from Japan. Italy is the birthplace of the best pedal straw plait; in that country corn is cultivated specially for the stalks, the grain being atrophied. Certain chips and yeddahs likewise come from Italy.

The plaits are imported into England in their natural state, and are then sent to be dyed or bleached. A few manufacturers for the highest class trade arrange to reserve certain shades for special clients, and some do their own dyeing. The sewing cotton used to stitch the hats is dyed in lengths of 5,000 or 10,000 yds. to match the straw. The first work of the dyer is to bleach the plaits intended for light shades or for white with peroxide of hydrogen.

The straw hat manufacturer employs blocks of the shape of the hat, and sews the plaits upon them by the aid of sewing machines. Two types of machines are used in converting the plaits into hat shapes. For the more

expensive hats a machine is used which sews a concealed stitch, while hats of the cheaper sort are made on a machine which leaves the stitching clearly visible. The block is placed beside the skilled worker, who stitches to fit the block. Frequently "slopes," corresponding to a gore in a dress, have to be inserted. As soon as the shape is completed it has to be stiffened, and is dispatched to a room to undergo treatment with a special preparation of gelatin. Later the shapes are steamed, shaped to the block, and ironed.

The cheaper hats are shaped by hydraulic pressure. In making buckram shapes for hat foundations, the buckram is bought in 24-yard rolls and cut into the shape desired. An aluminium or spelter block is used in pressing. The former is a modern invention and a great improvement, for while it can stand any amount of heat, it is extremely light in weight.

Genuine panama hats are imported from Colombia in plateau form, and are blocked in England. Otranto or simulated panama, made of paper, comes from Japan. Before the Great War, velour hats were largely imported from Austria, where the manufacture reached a high pitch of excellence. They now come from Paris and the north of England. The best velours are made of hare fur and dyed before being converted into hoods, thus obviating a white line at the edges when they are cut.

Hatch, EDWIN (1835-89). British theologian. Born at Derby, Sept. 4, 1835, he was educated at



Edwin Hatch,
British theologian

King Edward's School, Birmingham, and Pembroke College, Oxford. He was ordained in 1859, and went to Trinity College, Toronto, as professor of classics; in 1862 he became head of the high school at Quebec. In 1867, Hatch, again in England, was appointed vice-principal of S. Mary Hall, Oxford, and in 1884 university reader in ecclesiastical history, having previously been lecturer on the Septuagint. By this time he had made a reputation as a theologian, his Bampton lectures in 1880, On the Organization of the Early Christian Churches, having attracted much attention. His published works include *The Growth of Church Institutions*, 1887, and some poems. He died Nov. 10, 1889.

Hatching (Fr. *hacher*, to chop). Shading by minute intersecting lines in drawing or engraving. See Crosshatching.

Hatchment. Lozenge-shaped panel used to display the armorial bearings of a deceased person. If erected to commemorate an unmarried person, a widower or a widow, the whole of the panel surrounding the armorial shield would be painted black; if for a husband or a wife, the arms would be impaled, and half the hatchment would be painted black and half white, the black being on the dexter or sinister according to whether the deceased was the husband or the wife. Hatchments were formerly affixed to the residences of deceased persons and also carried in the funeral procession, to be subsequently hung up in the church. Many country churches in England still retain hatchments of local families. The word is said to be a corruption of achievement (*q.v.*). See Heraldry.



Hatchment in
heraldry

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Hatfield or BISHOP'S HATFIELD. Parish and market town of Hertfordshire, England. It stands on the Lea, 17½ m. N. of London, on the G.N.R., is secluded, and remarkable for its picturesque old houses and handsome church.

Known as Heathfield in Saxon times and as Hetfelle in Domesday, the manor was given by Edgar to the monks of Ely, and here, 1108-1538, the bishops of Ely had a palace, parts of which, including the banqueting hall and a gatehouse, remain. The manor was conveyed in 1538 by Bishop Goodrich to Henry VIII in exchange for lands in Cambridge, Essex, and Norfolk. Edward VI, who lived here occasionally before coming to the throne, conveyed it to his sister Elizabeth, who here held her first council. It was given, in 1603, by James I to Robert Cecil, 1st earl of Salisbury, in exchange for Theobalds (*q.v.*), near Cheshunt, and it has remained since in possession of the Cecil family.

The church of S. Etheldreda dates from Norman times, was extensively restored in 1872, and has two noteworthy chapels, one containing a recumbent effigy of Robert Cecil (d. 1612), an example of the costly Italian work of the early 17th century, and the other monuments of the Brocketts and Reades, of Brockett Hall, a mansion 3 m. from Hatfield, once the residence of Lord Melbourne and Lord Palmerston and later the seat of Lord Mount Stephen. Pop. 8,592. See English Studies, J. S. Brewer, 1881.

Other Hatfields include one in Worcestershire, 4½ m. S. of Worcester. Hatfield Broad Oak, Hatfield Regis, or King's Hatfield, is in Essex, 5½ m. S.E. of Bishop's Stortford, site of a 12th century Benedictine priory. Hatfield Forest is a parish 2½ m. N.W. of Hatfield Broad Oak. Great Hatfield is in the East Riding of Yorkshire; Hatfield Heath, a parish and village of Hatfield Broad Oak; Little Hatfield, in the East Riding of

Yorkshire; and Hatfield Peverel, an Essex parish or village 2½ m. S.W. of Witham, with remains of a 12th century Benedictine priory.

Hatfield Chase. Dist. of Yorkshire (W.R.). Composed of peat moss, it lies between the rivers Don, Idle, and Thorne. Originally, as the name suggests, parts of it were the resort of deer, while elsewhere there were fish. In 1626 it was drained by Cornelius Vermuyden, and most of its 180,000 acres is now under cultivation. The village of Hatfield, 7 m. from Doncaster on the Don, has an interesting church, S. Lawrence. The manor house here was once a royal residence, used when the kings hunted in the chase. Hatfield is supposed to be the Heathfield at which Penda, king of Mercia, gained a victory over the Northumbrians in 633. The station is Stainforth, on the G.C. Rly. Pop. 1,750.

Hatfield House. Seat of the Cecils, in Hertfordshire, England. Built of red brick and Caen stone, and one of the most notable examples of Jacobean architecture in the kingdom, it stands in the parish of Hatfield or Bishop's Hatfield. Erected by Robert Cecil, 1st earl of Salisbury, it was completed in 1611, contains part of the old palace of the bishops of Ely, and stands in a park measuring upwards of 10 m. in circumference. In the park is preserved the oak tree under which, according to tradition, Elizabeth was



Hatfield House. The Hall and, top right, south front of the mansion built by the 1st Earl of Salisbury

seated when she received news of her accession to the throne.

In shape a parallelogram, with two wings on the S. front, from designs by John Thorpe, the building was restored by the 6th earl. The W. wing was almost totally destroyed by fire,

Nov. 27, 1835, when the widow of the 1st marquess lost her life at the age of 85, but it was soon rebuilt. Notable features are the hall, grand staircase, long gallery, King James's room, armoury, library, summer and winter dining-rooms, drawing-room, and chapel.

In Hatfield House are preserved a remarkable collection of MSS. and state papers, some of which have been published by the Historical MSS. commission, many relics of Tudor and Jacobean times, and a large number of historical portraits, including that of Queen Elizabeth by Zuccaro. Much interest attaches to a genealogical tree, 42 ft. long, drawn up for Elizabeth, tracing her descent back to Adam. It is kept on a roller and in the later section coats-of-arms are attached to all the names. Outside the gates is a bronze statue, by George Frampton, of the 3rd marquess of Salisbury, erected by Hertfordshire friends and neighbours, Oct. 21, 1906. *See* Cecil; Gallery; consult also English Studies, J. S. Brewer, 1880.

Hathaway, ANNE (1556-1623). Maiden name of the wife of William Shakespeare. She was daughter of Richard Hathaway, yeoman farmer of Shottery, near Stratford-on-Avon, and married Shakespeare Nov. 28, 1582, being eight years older than her husband. *See* Shakespeare, William; consult also *The Women of Shakespeare's Family*, Mary Rose, 1905.

Hatherley, WILLIAM PAGE WOOD, BARON (1801-81). British lawyer. He was born in London, Nov. 29, 1801, a son of Sir Matthew Wood, and educated at Westminster, Geneva, and Trinity College, Cambridge. Called to the bar from Lincoln's Inn, in 1827, he was engaged for some years in parliamentary work and chancery practice, and took silk in 1845. In 1847 he was returned as M.P. for Oxford, was vice-chancellor of the county palatine of Lancaster, 1849-51, and in 1851 solicitor-general. He became a chancery judge in 1853, a lord justice of appeal in 1868, and lord chancellor in Dec. of the same year, when he was created Baron Hatherley. He resigned in 1872, and died July 10, 1881.

Hathor (dwelling of Horus). Egyptian goddess. A sky-deity, cow-headed or cow-horned, she was the great mother of the early dynastic people. In 1906 Naville found in a Deir el-Bahri shrine a superb sandstone cow, now at Cairo. This life-size figure, of the 15th century B.C., was worshipped as Hathor. When the goddess was represented in human form, with horned disk, she became



Anne Hathaway's Cottage at Shottery, near Stratford-on-Avon

identified with Aphrodite. The seven Hathors were benignant fates. Hathor-headed capitals are a favourite architectural motive. *See* Dendera; Egypt; Isis.

Hathras. Subdivision and town of the United Provinces, India, in Aligarh district. The district is extensively cultivated. Hathras town is a rly. junction and is of growing importance as an industrial and commercial centre. Area, 290 sq. m. Pop., subdivision, 210,936; town, 37,854.

Hatia. Island off the coast of Bengal, India, in Noakhali district. The island is low-lying and is exposed to the sea. In the great cyclone of 1876 over half the population lost their lives. Area, 185 sq. m.

Ha-tien. Town of Cochinchina, French Indo-China. It stands on the Gulf of Siam, 150 m. W.S.W. of Saigon. The inhabitants are mostly fisher folk. Pop. 11,000.

Ha-tinh. Harbour of Annam, French Indo-China. It stands on the Gulf of Tongking, 170 m. by rly. N.W. of Hué, the capital. It has trade in cotton and cereals.

Hatshepsut, HATASU, HAT-SHEPSET, OR HATSHOPSITT. Egyptian queen of the XVIIIth dynasty, about 1500 B.C. She was for 35 years co-regent with her father Thothmes I, her half-brother and consort, Thothmes II, and Thothmes III.

Hatteraick, DIRK. Dutch smuggler in Sir Walter Scott's novel, *Guy Mannering*, who fears neither "dog nor devil." Forced by Gilbert Glossin to be that attorney's accomplice in the kidnapping of Harry Bertram, he strangles Glossin in prison, and then hangs himself.

Hatteras. Headland at the S. end of a sandy island at the entrance to Pamlico Sound, N. Carolina, U.S.A. Heavy seas caused by storms make it dangerous to navigation.

Hattiesburg. City of Mississippi, U.S.A., the co. seat of Forrest co. It stands on the Leaf river, 115

m. N.E. of New Orleans, and is served by the New Orleans and N.E. and other rlys. Situated in an agricultural, cotton-growing, and lumber region, it has a wood reduction mill, rly. workshops and machine shops, and manufactures lumber products, fertilisers, wagons, and mattresses. Settled in 1882, it was incorporated in 1884. Pop. 14,952.

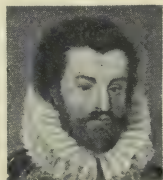
Hattin. Village of Palestine, the Ziddim of the O.T. It lay 5 m. N.W. of Tiberias, and was the scene of the final overthrow of the Crusaders by Saladin in 1187.

Hatto. Name of two archbishops of Mainz. Hatto I, having entered the church, became abbot of Reichenau, and in 891 archbishop of Mainz. As head of this important diocese, he took a leading part in German politics. He was a trusted counsellor of King Arnulf, being afterwards ruler of Germany for his young son, Louis the Child. He helped Conrad I to secure the throne after the death of Louis, and for some reason or other brought upon himself the dislike of the Saxons and of their duke, Henry the Fowler. He died May 15, 913.

Hatto II, who was archbishop from 968 to 970, is the Hatto whose name is associated with the legend of the Mouse Tower at Bingen, the story being that he was devoured by rats or mice. At one time Hatto I was regarded as the victim, but later research makes it refer to Hatto II, who had a reputation for oppressing the poor. *See* Curious Myths of the Middle Ages, S. Baring-Gould, 1897.

Hatton, SIR CHRISTOPHER (1540-91). English courtier. Born at Holdenby, Northamptonshire, he was educated

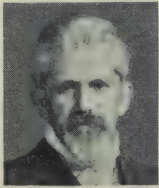
at S. Mary Hall, Oxford, and admitted to the Inner Temple in 1559. His prowess in a tourney attracted the notice of Queen Elizabeth, who made him one of her courtiers. He showered favours upon him, and he entered Parliament. Elizabeth employed him in important matters, such as the trials of Babington and Mary Queen of Scots, and eventually



Sir C. Hatton, English courtier

made him lord chancellor in 1587, to the disgust of the legal profession. His natural shrewdness enabled him to acquit himself with moderate success, and he retained the office until his death, which occurred on Nov. 20, 1591.

Hatton, JOSEPH (1841-1907). British author and journalist. Born Feb. 3, 1841, the son of



Joseph Hatton

Elliott & Fry

Francis Augustus Hatton, who founded *The Derbyshire Times*, he came to London in 1868 to conduct *The Gentleman's Magazine*. He held several appointments as editor and special correspondent, but as a journalist is chiefly remembered as the writer of *Cigarette Papers*, a weekly miscellany in *The People*, of which paper he was editor in his last years, and for the way in which, as correspondent for *The Standard* in America, he enabled his paper to publish the news of the shooting of President Garfield a day in advance of its contemporaries. Among his numerous works the best known are *Clytie*, subsequently dramatised by himself, and *By Order of the Czar*. He died July 31, 1907.

Hatton Garden. London thoroughfare. Named after Sir Christopher Hatton, lord chancellor to Queen Elizabeth, who lived at Hatton House, it connects Holborn Circus with Clerkenwell Road, and is known as a centre of the London diamond trade. Wycherley the dramatist visited the countess of Drogheda here before his marriage to her. Mazzini lived at No. 5. Mirabeau was also a resident. No. 53 was formerly a police-court presided over by a Mr. Laing, the original of Mr. Fang in Dickens's *Oliver Twist*. Joseph Strutt, the antiquary, died in Charles Street. See *Ely Place*.

Hatvan. Town of Hungary, in the co. of Heves. It stands on the Zagyva river, 30 m. N.E. of Budapest. It is an important rly. junction and is noted for its ancient castle. The chief industry is the manufacture of cloth. Pop. 9,750.

Hatzfeld. Former name of the town of Yugo-Slavia now known as Zsombolya (*q.v.*). There is also a village of Germany called Hatzfeld. It stands on the Eder, 40 m. W.S.W. of Kassel. Pop. 885.

Hatzfeldt-Wildenburg, PAUL MELCHIOR, COUNT VON (1831-1901). German diplomatist. Born of an

old and aristocratic family, he entered the diplomatic service of Prussia. In 1882 he was appointed

foreign secretary of the German empire. Three years later he was sent as ambassador to London, where he remained until his death, Nov. 22, 1901. His *Correspondence*, 1905, is interesting on account of his intimacy with Bismarck.

Hauberk (O.H.G. *Hals*, neck; *bergan*, to protect). Coat of chain mail or closely linked iron or steel



Count von Hatzfeldt-Wildenburg, German diplomatist



Hauberk. Coat of chain mail as worn by John of Gaunt

rings. At first probably little more than a gorget (*q.v.*), it developed until it sometimes reached to the wearer's knees—and had sleeves reaching nearly to the wrists. The Norman hauberk was put on over the head like a modern sweater; other forms were fastened up the front. The hauberk fell out of use among western peoples in the 15th century. See *Armour*.

Hauch, HANS CARSTEN (1790-1872). Danish poet. Born at Fredrikshald, Norway, May 12,

1790, in 1846 he was appointed professor of northern literature at Kiel. He left the country during the Holstein revolution in 1848, and in 1850 became professor of aesthetics at Copenhagen. He remained there until his death, March 4, 1872. Hauch wrote several historical tragedies, many lyrics and romances. An edition of his works was published at Copenhagen, 1873-75.

Hauff, WILHELM (1802-27). German poet and novelist. He was born at Stuttgart, Nov. 29, 1802, and having studied at Tübingen, acted as tutor for a couple of years. He became editor of *Das Morgenblatt* in his native town in Jan., 1827, but died Nov. 18 the same



Wilhelm Hauff, German poet

year. In his short life he wrote much of lasting excellence, notably his three series of *Märchen* (Fairy Tales), 1826-28; *Lichtenstein*, a Württemberg romance in the manner of Scott, 1826; *Memoiren des Satan* (Memoirs of Satan), 1826-27, rich in humour; and *Novellen* (Novelettes), 1828.

Haugesund. Seaport of Norway, in the amt of Stavanger. It stands on the W. coast, near the N. extremity of the island of Karmø, 60 m. due S. of Bergen. The port carries on a thriving trade, mainly in timber and fish. Pop. 18,000.

Haulage. Transport of material. In all mining operations this constitutes one of the most important branches upon the efficiency of which the success of an enterprise may depend. The most primitive method of removing material from a mine to the place where it is to be deposited for treatment consists in loading it on to the backs or shoulders of men or women, in some kind of container, and having it carried out. From this we pass by methods gradually increasing



Haulage. Plant for carrying logs by chain up an incline of 220 ft. for a distance of 492 yds.

in refinement and complexity to the elaborate haulage plants of the great gold and diamond mines of the Transvaal, for example, recording on the way, the wheelbarrow and every kind of transport animal—mules, llamas, horses, camels, oxen, dogs. The mechanical means employed include the light railway, the standard railway, and the aerial railway or wire rope.



Haulage. System of steam-driven rope haulage for trucks up a steep incline

Haulage in a coal mine may be described as main and secondary or contributory, the latter consisting in transporting the coal from the working face to the main-haulage ways; the former in conveying it to the foot of the shaft. In the main haulage, trains of trucks or tubs are drawn along rails either by horses, compressed air locomotives, or by wire ropes operated from near the bottom of the shaft either electrically or by means of engines worked by compressed air. Of recent years electrical locomotives and benzine or petrol locomotives have been introduced in coal-mining. The tubs or trucks employed are either of iron or steel or wood, and hold anything from 10 to 45 cwt. of coal, their size being determined by the character of the workings. In the direct haulage system, where the tubs are brought up an incline direct from the working face to the shaft, they are usually arranged to run back empty by their own weight on a single line of rails. See Mining.

Haulbowline. Island in Cork Harbour, co. Cork, Ireland. It is S. of Queenstown, and on it are a naval dockyard and an ordnance depot. The name is also that of a rock at the mouth of Carlingford Lough, on which is a lighthouse. See Queenstown.

Haunted House. The idea that houses and other places are haunted by the ghosts of the departed is very ancient, and common to nearly all nations. The usual ghost story describes various noises, together with the appearance of ghostly visitants, usually connected with some crime or tragedy that has been committed in the place. The majority of such tales are founded on careless and inaccurate observation, and the sounds and phenomena are explicable by material causation.

There are, however, on record

well authenticated cases which cannot be put down to the imagination, the evidence for them being as convincing as it well could be. Of several explanations proposed, the most probable appears to be that persons under strong emotion—as when meeting a violent death—may leave some kind of impression on their surroundings, one normally as imperceptible as the image on an undeveloped photographic plate, which becomes apparent only when the plate is placed in the developer. So the alleged impression becomes apparent only to those who are psychic or peculiarly sensitive thereto. This would account for the fact that some persons—otherwise perfectly normal—are greatly given to experiencing these strange phenomena, while others never do so.



Haunted House. Old house in Cock Lane, Smithfield, scene of manifestations which puzzled and deceived London society in 1782

Among houses at which supernatural appearances are said to have been observed is Mannington Hall, Norfolk, where Dr. Jessop,

rector of Scarning, on Oct. 10, 1879, saw the figure of a man in an old-fashioned costume of clerical cut. Newstead Abbey is reputedly haunted by a Black Friar, presumably one of the Augustinian order expelled in 1539 when the property was sold to Sir John Byron. The poet Byron declared he had seen him, and that the appearance of the Friar foretold a death in the family. Incidentally, Newstead Abbey is considered unlucky to its possessors, a view founded on the belief, as expressed in Spelman's History of Sacrilege, that holders of what was once Church property are doomed to disaster.

Numerous instances of houses infested for a time with malicious spirits, playing senseless pranks, are on record. The German people have long recognized this kind of haunting by Poltergeists, as they style them. Such was the Epworth ghost which in 1716-17 tormented the Rev. Samuel Wesley and his family. The Cock Lane (*q.v.*) ghost in a house off Smithfield, London, whose pranks were of the like character, was a deception. The Sampford Peverell ghost disturbed the house for three years from 1810. Fraud was suspected, but never discovered.

The best established account of haunting in recent years is found in the book *The Alleged Haunting of B— House* (2nd ed. 1900). Ballechin House, Perthshire, is the mansion indicated, as appears from a correspondence in *The Times* in June, 1897. The book is a cold, circumstantial account, under the imprimatur of the Psychical Research Society (*q.v.*), in which it is remarked that the occurrences observed had continued for over a quarter of a century. In 1913, circumstantial accounts of the haunting of Asfordby Rectory, Leicestershire, appeared in the newspapers. These manifestations had continued for thirty years.

Ghosts have a kind of quasi-legal status in the sense that the owner of a house stated to be haunted may bring an action at law for "slander of title," and may recover damages, as in the case of the modern house called Hillside at Egham, occupied by Stephen Phillips in 1903. He left the alleged haunted house and forfeited the rent. In 1904 the owner brought an action against his late tenant and a morning newspaper, but the case was settled out of court for £200. In 1906 *The Daily Mail* was defendant in a similar action, when £90 damages was awarded; but judgement was reversed on appeal. The house is now peacefully occupied.

C. G. Harper

Hauptmann, GERHART (b.1862). German dramatist. Born at Salzbrunn Nov 15, 1862, at the age of



Gerhart Hauptmann
German dramatist

eighteen he became an art student at Breslau, and in 1883 went to Rome, where he hired a studio and dabbled in sculpture. His marriage in 1885 made him

independent of earning a livelihood, and, having returned to Germany, he resumed his studies. In 1889 he began playwriting, producing *Vor Sonnenaufgang*, followed in 1890 by *Friedensfest*; *Einsame Menschen*, 1891, and *Die Weber*, 1892.

The first of these, by its outspoken attack on existing conditions and the ways of thought, placed Hauptmann at the head of modern German dramatists. With an almost repellent naturalism and realistic depiction of the meanesses and ugly trivialities of modern life, he struck a new chord in contemporary literature and art. From 1892 his outlook broadened, and thenceforward his output was considerable and varied. His *Emmanuel Quint*, 1910, and *Atlantis*, 1912, were powerful works. Recipient of the Nobel prize for literature in 1912, his works have been translated into most European languages.

Hauraki, GULF OF. Arm of the Pacific Ocean, on the E. coast of North Island, New Zealand. Protected by the Great Barrier Island athwart its entrance, it affords safe anchorage to the numerous vessels plying to the ports of Auckland and Thames. The southern extension of the gulf is known as the Firth of Thames. The Gulf of Hauraki contains a large number of islands, is 70 m. long and 42 m. broad.

Hauran, THE. District of Palestine anciently known as Auranitis. It lies E. of the Jordan, with loosely defined boundaries, but it forms the elevated plain, much of which is fertile, lying between the river and the Jebel Hauran (alt. 6,000 ft.) on the E. It is bounded N. by the Jaulan district S. of Damascus, and S. by the El Belka region.

Hausa. Negroid people, mostly N. of the Benue and Niger rivers, Nigeria. Their culture, based on settled husbandry, handicrafts, and trade, advanced under Libyan impetus, and the adoption of Islam by the upper classes. Their political power was overthrown by the Fula chief Dan Fodio in 1810, but since

the British occupation of Sokoto in 1903 their virile temperament has again emerged. There are vigorous colonies in Tunis and Italian Libya. Walled towns, such as Kano, represent their superiority to the



Hausa woman with feet and arm bandaged after the ceremonial application of henna. Above, Hausa man

general negroid level. The Hausa stock, essentially peaceable, was easily dominated by the pastoral Fula.

The Hausa military police regiments in British and Belgian territory are largely recruited from Hausa-speaking W. African negroes. See Negro; consult also Hausaland; or Fifteen Hundred Miles through the Central Soudan, C. H. Robinson, 1897.

Hausa. Language spoken in Africa by 15,000,000 people of Mahomedan faith, whose original home appears to have been between Sokoto and Bornu. Easy to learn, it has been adopted as the trade language from Lake Chad to the Guinea coast. It is generally considered to belong to the Hamitic family of languages, which include Egyptian (Coptic), Galla, and Berber. According to some, it is a Semitic tongue, but although the vocabulary contains a considerable Arabic element, it has no guttural sounds like Arabic 'ain and Ghain, and triliteral roots, the characteristic feature of all Semitic languages, are wanting.

The literature consists mainly of religious hymns and war-like songs translated from the Arabic. The Arabic alphabet is used. Since the territory came under British protection Hausa has received considerable attention, and a readership in the language has been established at Cambridge.

Hausen, MAX A. W. VON (1846-1922). German soldier. Born at Dresden, Dec. 17, 1846, the son of a Saxon nobleman, he entered the Saxon army as an ensign in a Jäger regiment, rising gradually to the rank of general. He was war minister of Saxony in 1902. When the Great War broke out he was associated in command with Duke

Albert of Württemberg in the operations in the Belgian Ardennes of the German Third Army, Aug.-Sept., 1914, and took part in the battle of the Marne, being repulsed at Vitry le François. He died Mar 19, 1922



Max von Hausen,
German soldier

Hauser, KASPAR (d. 1833). Wild boy of Nuremberg. He was found in the market place of that city,



Kaspar Hauser, wild boy of Nuremberg

From a contemp. print

May 26, 1828, dressed as a peasant, incoherent of speech and holding in his hand a letter professedly written by a poor labourer who said that the boy had been deposited at his door, 16 years before, by an unknown person, and that he had brought him up in strict confinement. At first he was imprisoned, but subsequently his education was undertaken by the city and by Earl Stanhope, and eventually he became a clerk. He died at Ansbach, where he had been sent to be educated, Dec. 17, 1833, from a wound in the left breast, which, he said, had been inflicted by his early custodian. Whether he was impostor or victim has never been determined.

Hausmann, GEORGES EUGÈNE, BARON (1809-91). French administrator. Born in Paris, March 27, 1809, his family was, as the name suggests, of German extraction. Educated in Paris, he entered the civil service, in which he made

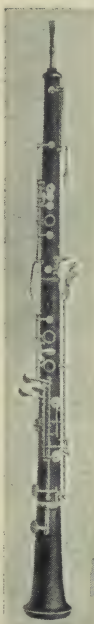
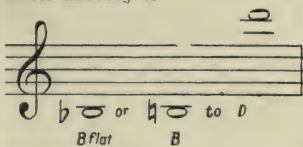


Georges Eugène Hausmann

good progress. In 1849 he was made prefect of Var, and in 1853 prefect of the Seine; there he became famous as the rebuilders of Paris.

Much of the city was remodelled by him, his improvements including the planning of the Bois de Boulogne and of extensive boulevards. He also built bridges and provided Paris with a new system of water supply and sewerage. In 1870, owing partly to the expenditure he had incurred, he was dismissed. In 1877 he entered the Chamber of Deputies as deputy for Ajaccio, and he died in Paris, Jan. 11, 1891. The Boulevard Haussmann preserves his name, and he wrote *Memoirs*, published in 1890-93.

Hautboy (Fr. *hautbois*, high-wood; Ital. *oboe*; Ger. *Hoboe*; Old Eng. *hoboy*). Wood-wind instrument consisting of a conical tube, with side holes, as in the clarinet and flute. It is played vertically with a double reed, and it first "overblows" at the octave. The useful compass of the ordinary treble hautboy is



Hautboy,
military
model

and good players command a few semitones higher. The tone of the hautboy is reedy, with a peculiar nasal ring, very pleasant at its best, harsh when forced. The hautboys were amongst the earliest of wind instruments to secure permanent places in the stringed orchestra, and in the Handel period (1685-1759) they were used in masses, like the strings. The modern orchestra employs two or three, playing independent parts.

An alto hautboy, a minor third lower in pitch, is known as *oboe d'amore*; a tenor instrument, a fifth lower, is the *cor anglais*. Bach used the *oboe d'amore* a good deal, and also a tenor *oboe di caccia*, of the same pitch as the *cor anglais*; but some authorities consider the *oboe di caccia*

to have been a high-pitched bassoon rather than a low-pitched hautboy. See Bassoon.

Haute - Garonne. Dept. of France. In the S.W. of the country, it is on the borders of Spain.

Its area is 2,457 sq. m. In the S., where the Pyrenees enter it, the dept. is mountainous, having peaks over 10,000 ft. high; in the N. it is hilly. The chief river is the Garonne, which flows right through it; others are the Salat, Ariège, and Save. The Canal du Midi also runs through the dept. Much land is covered by forests, but in the lower areas the soil is fertile, and wheat, maize, and vines are grown, also fruit. Mineral springs abound, the chief being the Bagnères-de-Luchon. Toulouse is the chief town and the dept. is divided into four arrondissements. Pop. 432,100.

Haute-Loire. Dept. of France. In the south-central part of the country, its area is 1,930 sq. m. It includes the mts. of the Cevennes, Vivarais, Velay, and other ranges. The Loire is the chief river, others being the Allier, Borne, and Lignon. Much of the land is covered with trees; the soil is not very fertile, and the cereals grown are chiefly the coarser kinds, rye, oats, etc. Cattle, goats, etc., are reared, and some coal is mined. Le Puy is the chief town, and the dept. is divided into three arrondissements. Before 1790 most of Haute-Loire was in the province of Languedoc. Pop. 303,800.

Haute-Marne. Dept. of France. It is contiguous with the depts. of Aube, Marne, Meuse, Vosges, Haute-Saône, and Côte d'Or, and was formerly part of the province of Champagne. Towards the S., the plateau of Langres and the Monts Faucilles form a hilly region, rising at points to over 1,600. ft. The river Marne rises in this part and flows in a northerly direction through the dept., other rivers being the Blaise, Rognon, Saulx, and the upper reaches of the Aube.

Cereals are widely grown, and the large woods, the vineyards, and grazing land are of importance. There are extensive industries in connexion with iron-foundries, cutlery, etc. The capital is Chaumont (*q.v.*), and the notable towns are Langres, St. Dizier, Wassy, Nogent, and the watering-place, Bourbonne-les-Bains. There are three arrondissements in the dept. Area, 2,420 sq. m. Pop. 214,800.

Hautes-Alpes. Dept. of France. It is contiguous with the depts. of Savoie, Isère, Drôme, and Basses-Alpes, and is bounded on the E. by the Italian frontier. It is entirely mountainous, its highest point being the Barre des Écrins 13,460 ft., and has no important industries, and only agriculture on a small scale here and there. The rivers Durance and Buech rise in the dept., and there are many small mt. torrents. There are three

arrondissements, with Gap as the capital, other towns being Briançon, St. Bonnet, Embrun, and Aspres. Area, 2,178 sq. m. Pop. 105,100.

Haute-Saône. Dept. of France. In the E. of the country, its area is 2,075 sq. m. In the N.E. are the Vosges Mts., with the Ballon de Servance, 4,000 ft. high. The chief river is the Saône; others are its tributaries, the Amance, Salon, and Ognon. The dept. is an agricultural area. In addition to the usual cereals of the temperate zone, the vine and fruit are grown, while many cattle are reared. A good deal of the land, however, is forest. The dept. is divided into three arrondissements. Vesoul is the capital; other places are Gray, Héricourt, St. Rémy, and Plancher les Mines. Pop. 257,600.

Haute-Savoie. Dept. of France. In the S.E. of the country, it is on the frontier of both Switzerland and Italy. Its area is 1,775 sq. m. It is a mountainous region, containing Mont Blanc, and is consequently not very fertile. There is, however, a certain amount of agriculture in the valleys, and many sheep are pastured. In parts of the dept. the vine is grown, and white wines are produced. Annecy is the chief town, and the dept. is divided into four arrondissements. The principal rivers are the Arve and other tributaries of the Rhône. Herein are Chamonix and other tourist centres; also one side of the Lake of Geneva. Haute Savoie has only been French since 1860, being part of the land obtained after the war against Austria. Before then it was in the duchy of Savoy. Pop. 255,137.

Hautes-Pyrénées. Dept. of France. It is contiguous with the depts. of Basses-Pyrénées, Gers, Haute-Garonne, and is bounded on the S. by the Spanish frontier. The southern part is extremely mountainous, embracing a large part of the central Pyrenees, but the flat country N. of Tarbes is fertile, bearing good crops of cereals, vines, and fruit. The chief rivers are the upper reaches of the Adour, Gave de Pau, Baise, Gers, and Neste d'Aure. Tarbes is the capital, other towns of note being Lourdes, Bagnères-de-Bigorre, Lannemezan, Luz, Vic, and Maubourguet. The grand mountain scenery attracts many visitors; Gavarnie, on the upper Gave de Pau, has the finest of the Pyrenean *cirques*, or vast natural amphitheatres. Area, 1,750 sq. m. Pop. 206,000.

Haute-Vienne. Dept. of France. It is contiguous with the depts. of Vienne, Indre, Creuze, Corrèze, Dordogne, and Charente, and is

especially hilly towards the S.W., where lies a part of the Montagnes du Limousin. Cereals, chestnuts, sheep, and cattle are the chief agricultural products. There are miscellaneous industries in the towns, porcelain, boots, paper, and liquors being notable. The river Vienne enters the dept. at its easternmost corner and flows W., tributaries in the dept. being the Taurion and Briance. The Gartempe flows across the N. part, and the Isle, Dronne, Tardoire, and Charente rise in the dept. There are four arrondissements, with Limoges (*q.v.*) as the capital, other towns of note being Bellac, Le Dorat, St. Junien, and St. Yrieux. At Chalusset, 10 m. S. of Limoges, is the ruined castle of the viscounts of Limoges. Area, 2,119 sq. m. Pop. 384,736.

Hautmont. Town of France. In the dept. of Nord, it is 18 m. E.S.E. of Valenciennes and 139 m. from Paris. It has manufactures of glass, pottery, etc. During the Great War it was occupied by the Germans. Pop. 15,000.

Haut-Rhin. Former dept. of France. Constituted with the other depts., in 1790, Haut-Rhin was annexed by Germany in 1871, except for the arrondissement of Belfort, which became the Territory of Belfort (*q.v.*). Its capital was Colmar, and under German rule it formed the district of Upper Alsace. This area was restored to France by the treaty of Versailles, 1919. Area, 1,589 sq. m. See Alsace.

Haüy, RENÉ JUST (1743-1822). French mineralogist. Born in St. Just, Oise, Feb. 28, 1743, he was educated for the Church, but while teaching in Paris he became interested in mineralogy. In 1781 he discovered the geometric law of crystallisation, and two years later he was elected to the academy of sciences. Becoming professor of mineralogy at the museum of natural history in Paris, Haüy made a magnificent collection of crystals and wrote extensively on the subject. In addition to his works on crystallography, Haüy took a prominent part in the introduction of the metric system into France. Among his best known works are *Traité de Minéralogie*, 1801; *Traité des caractères physiques des pierres précieuses*, 1817; and *Traité de cristallographie*, 1822. Haüy died June 3, 1822.

Haüyne. Mineral compound of calcium, aluminium, and silica, named after René Haüy, and a constituent of those igneous rocks which are rich in soda. It is found in bright blue crystals and grains in the lavas of Vesuvius and elsewhere in Italy, Azores, Canary,



Havana. Plan of the capital city of Cuba, with the entrance to the harbour and the quays

and Cape Verde Islands, and parts of the United States. Haiyue is one of the sodalite group of minerals, of which lapis lazuli is the best known member.

Havana (Span., *La Habana*). Largest city of the W. Indies. The capital of Cuba, it is situated on the N. coast, on one of two peninsulas forming the harbour, and is a busy commercial centre. It has an excellent rly. service, being linked up with all the chief towns on the island. The bay of Havana is one of the securest harbours in the world. It receives the outflow of a number of small streams, and is divided into several small bays.

Havana consists of old and new towns. The former lies within the limits of the old walls, built between 1671 and 1740, and almost wholly dismantled between 1863 and 1880, and is narrow and cramped. The new town is built on more spacious lines, and generally presents a clean and ordered appearance, with fine promenades, squares, and streets, some of them lined with trees. El Morro and the Castillo del Principe belong to the city's fortifications.

The principal buildings include the cathedral, completed 1724, in which the remains of Columbus

reposed before their transference to Spain in 1898; the university, the Jesuit College de Belen, the massive Tacón or Nacional Theatre, the old palace in which the president resides, the opera house, the bishop's palace, the admiralty, and the national library, housed in the Maestranza, the former arsenal. The Prado is a

wide promenade, fashionably frequented.

The staple industry of Havana is the manufacture of cigars and tobacco. Sugar is also produced in large quantities, and other manufactures include barrels and cases for the cigar and tobacco supplies, and carriages, wagons, and machinery. These, with oil, rum, honey, wax, and fruit, are the chief articles exported, the imports consisting mainly of grain, flour, food-stuffs, and cotton. The total value of the foreign trade exceeds \$27,000,000 a year. Pop. 360,500.

Founded in 1515 on the S. coast, Havana was removed to its present site in 1519, when it was known as San Cristobal de la Habana or Savanna. It frequently suffered at the hands of pirates in the 16th

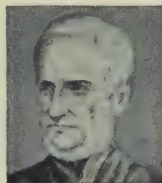


Havana. View of the city from Cabana, looking over the entrance to the harbour. Top right, one of the main streets

century, and was the object of Dutch attack in the following century. In 1762 it was captured by the English after a lengthy siege, but was restored at the peace of 1763. On Feb. 15, 1898, the Maine was blown up in the harbour, the incident leading to the Spanish-American War, during which Havana was blockaded by the American fleet.

Havant. Market town and urban district of Hampshire, England. It stands on Langstone Harbour, 7 m. N.E. of Portsmouth and 67 m. from London on the L.B. & S.C. Rly. The chief building is the old church of S. Faith, re-

when he entered the Rifle Brigade. In 1823 he transferred to an Indian regiment, two of his brothers being officers in that country. His first experience of active service was in Burma (1825-26), after which he was in the Afghan War, where he fought in most of the operations in and around Kabul. He fought against the Mahrattas and the Sikhs, and was made quarter-



H. Havelock

master-general and later adjutant-general of the troops in India.

In 1857 Havelock held a command in the short war against Persia, and on the outbreak of the Mutiny he was sent with a force to crush the mutineers. In a succession of fights he showed great skill, but he was unable to relieve Cawnpore, while he only

got through to Lucknow when reinforced by troops under Outram. He had just taken that city and been knighted when he died there of dysentery, Nov. 24, 1857. His services were recognized by a baronetcy to his son, Sir H. Havelock-Allan. Havelock, a sincere if somewhat narrow Christian, belonged to the Baptist denomination. He wrote *Memoirs of the Afghan Campaign*. See *Memories of Havelock*, J. C. Marshman, 1860; *Havelock*, Archibald Forbes, 1890; *The Bayard of India*, W. J. Trotter, 1903.

Haverfordwest

(Welsh, Hwlfordd). Municipal borough and river port of Pembrokeshire, of which it is the county town. It stands on the W. Cleddau river, 8½ m. from Milford, and is served by the G.W. Rly. A county of itself, it has its own lord lieutenant. The town proper is on the west of the river, hence the west added to the earlier name: on the east are the suburbs of Cartlet and Prendergast. The chief buildings are the churches of S. Mary, S.

Martin, and S. Thomas. An old building is now used for the fish market. Two bridges cross the river. The dominating feature of the town is the keep of the castle, built by one of the Clares in the 12th century. There are remains of an Augustinian priory. There is a trade by river in coal and agricultural and other produce.

Haverfordwest was settled by the Flemings in the 12th century. It obtained various privileges, and in 1485 it became a corporate town. Its rights as a county date from 1536. A stronghold of the English, it was several times attacked by the Welsh. After the pacification of Wales it became a flourishing port and remained so until supplanted by Milford. Market day, Sat. Pop. 5,900.

Havergal, FRANCES RIDLEY (1836-79). British poet and hymn-writer. Born at Astley, Worcestershire, Dec. 14, 1836, daughter of the Rev. William Henry Havergal, writer of sacred music, she began to write verse at the age of seven. She



F. R. Havergal

is chiefly remembered as a writer of hymns, one being *Take my life, and let it be*. An edition of her complete poetical works appeared in 1884. She died June 3, 1879.

Haverhill. Market town and urban district of Suffolk. It is 16 m. from Cambridge on the G.E. Rly. and 55 from London. It is the terminus of the Colne Valley line. The chief building is the restored church of S. Mary. The industries include the making of cloth, boots, and bricks, and there



Haverfordwest, Pembrokeshire. The town and castle

is a trade in agricultural produce. Market day, Friday. Pop. 4,750.

Haverhill. City of Massachusetts, U.S.A., in Essex co. It stands on the Merrimac river at the head



Havant, Hampshire. East Street and the shopping centre of the town

stored in the 19th century, but with some Early English work. Near is Hayling Island. The industries consist of tanning, malting, and brewing. Market day, Tues. Pop. 4,100.

Havas Agency (*Agence Havas*). French news agency. Founded in 1825 by Charles Havas, a journalist who specialised in translations from foreign newspapers, and continued by his son, Auguste Havas, it was converted into a company July 24, 1879, with a capital of 8,500,000 francs, M. Favier being its first president and M. Lebey its director.

Havel. River of N. Germany. Originating in a lake near Neu-Strelitz in Mecklenburg-Strelitz, it flows S.E. and S. to Spandau, where it is joined by the Spree, and Potsdam, turning thence roughly W. to Brandenburg and N.W. to its junction with the Elbe, near the point where the latter river makes its final bend N.W. towards Hamburg and the North Sea. Navigable as far as Fürstenburg, 30 m. from its source, the Havel is important in the waterways system of N. Germany. See *Brandenburg*.

Havelock, SIR HENRY (1795-1857). British soldier. The son of William Havelock, a shipbuilder, he was born at Sunderland, April 5, 1795. Educated at Charterhouse School, he studied law until 1815,

of navigation, 32 m. N. of Boston, and is served by the Boston and Maine Rly. An important industrial town, it has large boot and shoe factories, and also manufactures woollen hats, leather, bricks, nails, slippers, and boot and shoe machinery. Settled in 1640, Haverhill was incorporated in 1645, and received a city charter in 1869. Pop. 49,180.

Haversack (Ger. *hafer*, oats). An oatsack or nosebag. Haver



Haversack as used in the British army

remains a common provincialism for oats in Scotland, especially in the compounds havermeal and havercakes. Haversack is used especially of the small canvas bag in which soldiers carry their rations and personal effects. In the British army it is carried at the left side, either suspended from the belt or from a shoulder sling, the latter worn under the belt.

Haversian Canals. Minute canals, running lengthwise through bones, containing blood-vessels. They are named after an English physician, Clopton Havers (c. 1650-1702).

Haverstock Hill. London thoroughfare. It connects Chalk Farm with Rosslyn Hill, Hampstead. Belsize Park station on the Hampstead (Tube) Rly. is here; Haverstock Hill station on the Mid. and G.E. Rlys. is at Lismore Circus on the E. Near Belsize Park station is Hampstead town hall, built in 1877. See Hampstead.



HAVER The town and sea front, with the mouth of the Seine. Top right, ridge across the commercial harbour leading to the Bourse

Havildār (Pers.). Native non-commissioned officer in the infantry and artillery of the Indian army. In rank he is equivalent to a serjeant; he may be promoted to havildār major. The corresponding rank in the cavalry is *dafadār*.

Havre or **LE HAVRE.** Seaport town of France, chief town of the dept. of Seine Inférieure. It lies on the N. bank of the Seine estuary, 49 m. W. of Rouen, and 143 m. by rly. from Paris, with which it is connected by the main État line. The town itself is almost entirely modern, and, though well laid-out, with broad main streets running E. and W., has few features of interest. The hôtel de ville is a handsome modern building in French Renaissance style, as also is the Exchange; the museum and library (1845) contain some interesting pictures, and other public buildings are a natural history museum, several lycées, commercial and technical schools, a theatre, palais de justice, prison, and the large Kléber barracks.

The principal church is that of Notre Dame, built originally 1575-1600. The large rly. station has



Havre arms

extensive goods yards, and all the principal quays and dock warehouses are connected by rly. Havre has important engineering works, shipbuilding yards, oil refineries, chemical and dye works, a state tobacco manufactory, and many miscellaneous industries.

Havre is one of the greatest of French seaports, the main centre of trade with N. America, and the docks are extensive and well constructed. The daily steamer from Southampton comes into the outer harbour, out of which, to the N., opens the 17th century Bassin du Roi. The chief dock of the inner harbour is the Bassin de l'Eure, 1846-56, with an area of over 70 acres, used by the liners of the Compagnie Générale Transatlantique; the Bassins Vauban and Bellot are also notable. The main block of warehouses covers about 60 acres. Large improvements and extensions were interrupted by the Great War, but continued in 1919. The chief trade, normally, is in coal, cotton, cereals, woods, sugar, coffee, and cocoa. Pop. 136,159.

Louis XII founded the chapel of Notre Dame de Grâce in 1509, whence came the town's old name of Havre-de-Grâce. Fortifications were built and the harbour enlarged by Francis I, 1516, with a

view to English wars, but it was handed over to Elizabeth by Condé, 1562. Recovered in 1563, it was developed by Richelieu and Colbert, and in time became a serious rival to the English ports.

During the Great War, Havre was a base of the British Expeditionary Force and engineering stores depot, crowded with military works, the port thronged with shipping. In 1916 the total tonnage disembarked and loaded was 6,422,219, as compared with 3,668,414 in 1913. Havre was the seat of the Belgian government from Oct., 1914, to Nov. 1918.

Hawaii or **OWYHKEE.** Southernmost and largest of the Hawaiian Islands. Largely volcanic, it is barren to the W. and clad with vegetation on the E., the interior alternating between productive valleys and lava-covered districts. Mauna Kea and Mauna Loa are two of the greatest active volcanoes in the world. The island, well wooded, produces large quantities of sugar, and also coffee, fruit, rice, etc. Hilo is the capital. Pop 70,000.



Hawaiian Islands. Map of the chain of islands which form a territory of the U.S.A.

Hawaiian Islands or **HAWAII**. Chain of islands in the Pacific Ocean. Formerly called Sandwich Islands, they constitute a territory of the U.S.A. They consist of eight larger inhabited and several smaller uninhabited islands of volcanic origin, contain a number of active and quiescent volcanoes, and cover an area of 6,449 sq. m. The inhabited islands are Hawaii, 4,015 sq. m.; Maui, 728 sq. m.; Oahu, 600 sq. m.; Molokai, 261 sq. m.; Kauai, 544 sq. m.; Lanai, 135 sq. m.; Niihau, 97 sq. m.; and Kahoolawe, 69 sq. m.

Most of the islands are girdled by coral reefs and the larger of them are mountainous, the loftiest summits, on Hawaii, being the volcanoes of Mauna Kea and Mauna Loa, 13,805 ft. and 13,760 ft. high respectively. Kilauea, on the E. of Mauna Loa, is a constantly agitated lava lake about 8 m. in circumference, and the greatest active crater. Hawaii is the largest mass of volcanic material in the world; it rises 30,000 ft. from the ocean bed and consists almost entirely of lava. On Maui is Haleakala, whose crater, 19 m. in circumference, is the largest extant.

The climate is agreeable, being tempered by the N.E. trade winds which prevail for three-fourths of the year. The extremes of temperature range between 54° F. and 89° F. and the rainfall averages about 55 ins., most of which falls in the islands to the W. At Honolulu the mean temperature is 76° F. and the annual rainfall 32 ins. The mts. inland from Hilo Bay form, however, one of the rainiest places in the world; the annual precipitation frequently exceeds 200 ins.; here the persistent warm moisture-laden trades deposit part of their load of water. The general humidity of the atmosphere is harmful to Europeans with a tendency to tuberculosis. The flora is rich and diversified. The mountains are largely forest-clad, characteristic trees being the koa, koaia, candle-nut, and sandalwood. Screw-pines, ferns, and a variety of flowering

plants abound, and among imported trees and shrubs are the banana, mango, pineapple, coconut, gooseberry, and tamarind.

Mammals are few and reptiles are represented solely by the lizard, but bird species number upwards of seventy, and include many

peculiar to the islands. Thousands of sheep are pastured on the lower slopes of the mountains and agriculture receives considerable attention. The production of sugar is by far the most important industry, the crop representing about three-fourths of the entire products of the territory. Rice, fruits, especially pineapples, coffee, sisal hemp, wool,

cotton, and rubber are exported. Sulphur, pyrites, sal ammoniac, coppers, common salt, and other minerals occur. Most of the foreign trade is with the U.S.A., which takes about 97 p.c. of the exports. There are 342 m. of rlys. on the four larger islands, the principal line



Hawaiian Islands. 1. Cutting cane on a sugar plantation. 2. Natives cutting pineapples. 3. Waterfall on Kauai Island

being that which extends from Honolulu northward round the greater part of the coast of Oahu. In addition, about 635 m. of private lines serve the plantations. Honolulu (*q.v.*), the capital and chief port, is visited by several steamship lines, and Pearl Harbour is a naval station. Other harbours are Hilo on Hawaii and Kahului on Maui.

The indigenous population, belonging to the brown Polynesian race, are of good physique and handsome, but little inclined to industry. In language and religion they are related to the Tahitians. Their number has steadily decreased, and is now greatly exceeded by the Japanese, who represent two-fifths of the entire population, which is about 250,600. Other large sections of the inhabitants are the Americans, the Portuguese, the Filipinos, and the Chinese. The latter are now excluded from immigration. Europeans number about 1,000, and by these

and Americans most of the influential positions are held. Leprosy and tuberculosis have largely reduced the native race, and both diseases are the subject of constant medical attention. In 1865 a leper settlement was established on Molokai island.

Reliable history of the Hawaiian Islands dates from their discovery or rediscovery in 1778 by Captain Cook, who was killed by natives in Kealakekua Bay the following year. It is, however, generally accepted that they were visited by Gaetano in 1542 or 1555, while he is thought to have been preceded by survivors of a wrecked Spanish vessel in 1527. The islands were ruled by native kings down to 1891, then by Liliuokalani (1838-1917), the sister of the last monarch. She was deposed in 1893, and a provisional government was formed, the islands being constituted a republic the following year. In 1898 they were formally annexed by the U.S.A., and in 1900 were organized as a territory.

Hawara. Village of Upper Egypt, 6 m. S.E. of Medina, in the Fayum. A mud-brick pyramid, once limestone-cased, was identified by Petrie in 1888 as that of Amenemhat III of the XIIth dynasty. The adjacent funerary temple was the Labyrinth described by Herodotus. Some tombs dated A.D. 100-250, of the Roman period, yielded mummy-portraits on canvas or wood, the finest being now in the National Gallery, London.

Hawarden. Parish and market town of Flintshire, Wales. It stands on a tributary of the Dee, 6 m. W.S.W. of Chester, with a station on the G.C. Rly. There are remains of a 13th century castle, close to which is the modern Hawarden Castle, long the residence of W. E. Gladstone. The church, dedicated to S. Deiniol, has memorials to the Gladstones, and here are a 17th century grammar school and S. Deiniol's Hostel for theological students founded by Gladstone. The old castle was long the seat of the Stanleys. In the 17th century it came to John Glynn, the lord chief justice. In 1752 one of his descendants built the new castle and in 1874 this passed, on the death of her brother, Sir Stephen Glynn, Bart., to Mrs. Gladstone. The estate is still the property of the Gladstone family. Coal mines have been opened on it. The Welsh name is Penarlâg. Pop. 5,400. *Pron.* Harden. See Gladstone.

Haweis, HUGH REGINALD (1838-1901). British author and preacher. He was born at Egham, Surrey, April 3, 1838, and educated at

Trinity College, Cambridge. Having taken orders, he became incumbent of S. James's, Marylebone, in 1866, where he became known as a vigorous and eloquent if somewhat sensational preacher. He was passionately devoted to music, and will be chiefly remembered by his stimulating works on musical subjects, of which the best known are *Music and Morals*, 1871, *My Musical Life*, 1884, and *Old Violins*, 1898. He also wrote on theological subjects, and was enormously popular as lecturer. His hymn *The Homeland, the Homeland* achieved wide popularity. He died in London, Jan. 29, 1901.



H. R. Haweis,
British author
Docteny

Hawera. Town of North Island, New Zealand. It is 45 m. by rly. S.S.E. of New Plymouth, and is a centre of dairying. Pop. 3,375.

Hawes. Market town of Yorkshire (N.R.). On the N.E. and Mid. Rlys., it is 16 m. from Leyburn. It has a trade in dairy produce and there is a butter market. Market day, Tues. Pop. 1,500. Hawes Junction is 6 m. away. An important point on the Midland system, it was the scene of a terrible railway accident, Dec. 24, 1910.

Haweswater. Lake of Westmorland, England. It is 25 m. N. of Kendal, and lies 700 ft. above sea level, being the highest of the



Haweswater, Westmorland. The lake looking south from Measand Beck. In the distance is Harter Fell

Abraham

English lakes. It is about 2½ m. long. In 1918 Haweswater was purchased by the city of Manchester, the intention being to use it, in connexion with Thirlmere, to supply that city with water.

Hawfinch (*Coccothraustes vulgaris*). Bird of the finch family, closely related to the grosbeak. Common in S. Europe, it is frequently seen in England, though rare in Scotland. It is about 7 ins. long, and is a handsome bird, with light-pinkish-brown breast, dark-brown back, wings banded with black, brown and white, large yellowish-brown head, and large blue beak.

Hawick. Mun. burgh and industrial town of Roxburghshire, Scotland. It stands at the junction of the Slitrig with the Teviot, 53 m. S.E. of Edinburgh on the N.B.R. The church of S. Mary (1763) occupies the site of a former church of that name erected in the 13th century. Among the antiquities of Hawick are the Moat,



Hawick arms

an earthen mound 30 ft. high and 310 ft. in circumference, and a portion of the Tower Hotel, formerly the peel-tower of the Drumlanrig Douglasses, the only building which escaped the devastation wrought by the earl of Sussex in 1570.

In the neighbourhood are Branxholme and Harden, old residences of the Scotts, the first named the scene of Scott's Lay of the Last



Hawick, Roxburghshire. High Street, with the statue commemorating the capture of an English standard by the Hawick callants after Flodden Field. Unveiled, 1914

Valentino

Minstrel. The annual festival, known as the "common riding," has been continuously celebrated for upwards of 300 years. The hosiery and woollen manufactures are important, and a noted livestock market is held. Market day, Thurs. The Hawick Burghs formerly returned an M.P., but they are now merged into the county of Roxburgh. Pop. 18,000. *Pron.* Haw-ick.

Hawk. Popular name for all birds of prey that are not eagles, vultures, or owls. The term is vague and unscientific and should be restricted to some nine genera, which include the sparrow-hawks, goshawks, and harriers. The common kestrel is not a hawk, but a falcon. *See* Caracara.

Hawkbit (*Leontodon*). Genus of perennial herbs of the natural order Compositae, natives of Europe



Hawkbit. Foliage and flowers of *Leontodon autumnalis*

and W. Asia. In general appearance they are much like small dandelions, for which they are often mistaken. They have milky juice, narrow and boldly toothed leaves all springing from the rootstock. The flower-heads are yellow, and all the florets are strap-shaped, as in the dandelion. The hairs of the fruit-parachute are feathered. The common hawkbit (*L. hispidus*) is more or less bristly all over, the autumnal hawkbit (*L. autumnalis*) is smooth or nearly so.

Hawke. British cruiser. She was torpedoed and sunk by the German submarine U 9 on Oct. 15 1914, off the E coast of Scotland, Capt. H. P. E. Williams, 25 other officers, and 499 men being lost. The attacking submarine drove

off several vessels that endeavoured to pick up men clinging to wreckage, who thus died of exhaustion. The Hawke was launched at Chatham in 1891 and completed in 1893, her tonnage being 7,350, and armament two 9-2-in. and ten 6-in. guns. Soon after her loss all similar ships were withdrawn from the patrol and replaced by armed liners.

Hawke, EDWARD HAWKE, 1ST BARON (1705-81). British sailor. Born in London, he entered the



navy in 1720. He served in N. America and the West Indies until 1727, becoming commander in 1733. Six years later he commanded the Portland off Barbados and N. America, and in 1743 was promoted to the Berwick, and took part in the battle off Toulon, 1744.

In command of a squadron off Ushant and Finisterre, Hawke defeated a French squadron and was knighted for his services. Elected M.P. for Portsmouth in 1747, he was promoted vice-admiral in 1748 and commanded the home fleet until 1755, when he became commander-in-chief at Portsmouth. In 1756 he superseded Admiral Byng in the Mediterranean, but was too late to avert the loss of Minorca.

His great exploit was in 1759, when, blockading Brest for some months, he utterly defeated the French admiral de Conflans in Quiberon Bay in a battle acknowledged to have been the greatest naval victory since the Armada. It crushed French naval power and prevented any possibility of an

invasion. He was first lord of the admiralty 1766-71, admiral of the fleet, 1768, and was made a baron in 1776. He died at Sunbury, Oct. 17, 1781. His son, Martin Bladen, succeeded to the barony, which passed down to the present holder. *See* Life, M. Burrows, 1883.

Hawke, MARTIN BLADEN HAWKE, 7TH BARON (b. 1860). English

cricketer. The eldest son of the 6th baron, who

was a clergyman, he was born Aug. 16, 1860. Educated at Eton and Magdalen College, Cambridge, he played cricket for both school and university. In 1881 he played first for Yorkshire, and in 1883 was made captain of the county team, his captaincy lasting until 1910. During that time Yorkshire won the county championship eight times, Hawke scoring in all over 13,000 runs. He took out cricket teams to America in 1891 and 1894; India, 1892-93; and South Africa, 1895-96.

Hawk Eagle. Term variously used to include certain genera of birds of prey which are placed



Lord Hawke, English cricketer Russell



Hawk Eagle. *Nisaetus fasciatus*, found on the Mediterranean coast

between the sea eagles and the true eagles. It is better, however, to restrict it to the genus *Nisaetus*, which comes nearest to the true eagles. The hawk eagles, of which there are several species, are found in S. Europe, Africa, India, and Australasia. Bonelli's hawk eagle (*N. fasciatus*) is often found about the Mediterranean, and is known in India as the peacock-killer. It is extremely destructive in the poultry yard. The booted hawk eagle (*N. pennatus*) is no larger



H.M.S. Hawke. British cruiser torpedoed and sunk off the Scottish coast, Oct. 15, 1914

Cribb, Southsea

than a kite, and has a similar range. It commonly breeds in Spain where it is very troublesome to the owners of pigeons.

Hawker. Itinerant dealer or vendor. In law, a hawker is distinguished from a pedlar as one who conveys his goods by horse or other beast, whereas the pedlar conveys his goods on foot. Hawkers and pedlars must take out licences for their respective trades, the former costing £2, the latter 5s.

Hawker, HARRY GEORGE (1891-1921). British airman. Born in Australia, he was taught to fly

at Brooklands, gained his pilot's certificate in 1911, and soon became a noted figure in aviation. He made a British record for height (12,900 ft.) in June, 1913, following this up by establishing a British duration flight record (8 hrs. 23 mins.), and world's record for altitude with three passengers. In Aug., 1913, he flew 1,040 m. In *The Daily Mail* £5,000 All-British and waterplane race round British Isles, receiving £1,000 from that newspaper. He gained the British height record for a pilot alone in 1915, and in April, 1916, made a world's record for height (24,408 ft.) at Brooklands.

In May, 1919, he competed for *The Daily Mail* £10,000 prize for a trans-Atlantic flight, and was the first British competitor to start. Along with Commander K. MacKenzie Grieve, on a Sopwith machine, he left St. John's, Newfoundland, in bad weather. When halfway across, the aeroplane was forced to descend through a defect in a pipe. The two airmen were rescued by a Danish steamer and landed in Scotland. They were awarded a consolation prize of £5,000 by *The Daily Mail*. In June, 1919, Hawker and Grieve published a record of their experiences entitled *Our Atlantic Attempt*. He was killed while flying, July 12, 1921. See *Atlantic Flight*.

Hawker, ROBERT STEPHEN (1803-75). British poet and antiquary. He was born at Stoke Damerel, Devonshire, Dec. 3, 1803, and educated at Pembroke College Oxford, where he won the Newdigate prize for a poem on Pompeii in 1827. He was vicar of Morwenstow, Cornwall, 1834-75. His best known poems are *The Quest of the Sangraal* and *Cornish Ballads*. Much controversy arose round the question whether the well-known



R. S. Hawker

Hawker also wrote on local antiquarian topics. He died at Plymouth, Aug. 15, 1875. See *The Life and Letters of R. S. Hawker*, C. E. Byles, 1905.

Hawke's Bay. Provincial dist. in North Island, New Zealand. It has a seaboard of 300 m. and area of 4,241 sq. m. Ruahine and other mountains form a continuous range along its length, and their peaks, 3,000 to 6,000 ft. in height, are snow-clad in winter. Mostly broken forest country, its chief industry is timber, but sheep-grazing is also extensively followed. Its chief ports are Napier and Gisborne; Hastings, Dannevirke, and Woodville are important towns on the main line to Wellington. Pop. 54,267, exclusive of Maoris.

Hawkesbury. River of New South Wales. It is formed by the junction of the Nepean and the Grose, is 330 m. long, drains a basin of 9,000 sq. m. in area, and falls into Broken Bay, 25 m. N.N.E. of Sydney. It is the chief of the E. flowing rivers. A seven-span girder bridge crosses the river on the main line from Adelaide to Brisbane. It is proposed to dam its headstream, the Warraganda, to provide irrigation and electric power for the Sydney district.

Hawking or Falconry. The art of hunting with trained hawks or falcons. One of the oldest and

refrain. And shall Trelawney die?' etc., of the ballad *Trelawney* was really as he averred sung by the miners in the days of the trial of the seven bishops.

most universal of sports, it was known in China about 2000 B.C., and is mentioned as prevalent in Europe by Aristotle, Pliny, and Martial. In Great Britain, hawking was practised in Saxon times, as is shown by various illustrated MSS. of the period in the British Museum; in the Bayeux tapestry (*q.v.*) Harold has a hawk upon his wrist. Always a royal and aristocratic sport, hawking was probably at the height of its popularity during the reign of Elizabeth. Her chief falconer was Sir Robert Sadler, who trained hawks for his royal mistress at Everley, Wiltshire.

The sport was a favourite theme with early British writers. Dame Juliana Berners's celebrated *Book of St. Albans* contains a treatise on Hawkyng and Hunting, 1486. George Turberville wrote *The Booke of Faulconrie or Hawking* 1575; and these were followed by Simon Latham's *The Falcon's Lure and Cure*, 1615-18; Edmund Bert's *An Approved Treatise on Hawks and Hawking*, 1619; and Richard Blome's *The Gentleman's Recreation*, 1686.

The hawks employed are of two groups, the long-winged and the short-winged, the former being termed "hawks of the lure," and the latter "hawks of the fist." The long-winged comprise the peregrine, the northern falcon, and the Iceland and Greenland varieties, the short-winged consist of the goshawk and sparrowhawk. The birds should be taken for training when they are just fledged but have not left the nest. The female bird, being the larger, is invariably chosen.

The several implements used in the confining and training of hawks are the hood, jesses, bells, the lure, blocks, and the cadge. The



hawking. 1. Goshawk. 2. Sparrowhawk. 3. Iceland Jer-falcon. 4. Hood. 5. Ruffier hood. 6. Claw with jess and bell. 7. Peregrine falcon with Dutch hood, bells, and jesses as carried on glove.

hood is the principal means by which a hawk is controlled, and a bird once thoroughly accustomed to wear it can be taken anywhere and handled quite easily, always remaining at rest when hooded. Jesses are two short strips of leather placed round the hawk's legs, to which the leash, by which the bird is held, is attached. Bells are affixed, one to each leg, just above the jess; and are of great assistance in locating the hawk when the quarry has been killed out of sight.

The lure also plays an important part. A good lure can be made of a horseshoe well padded and covered with leather. This is in turn covered with the wings of a wild duck, and strings are attached, to which the meat, constituting the bird's food, is tied. The lure serves the double purpose of familiarising the bird to its prey and accustoming it to come to hand readily. The falconer wears a leather glove, for protection from the hawk's claws, upon his left hand when the bird is resting upon it. European falconers always carry the hawk on their left hand; in the East it is carried on the right.

Blocks are portions of tree trunks firmly fixed in the ground, upon which the hawks sit when at rest and to which they are secured by the leash. The cage consists of four pieces of wood, padded and fixed together in the form of an oblong frame, on which the birds perch when being carried from one place to another. Hawks are trained to kill various kinds of game, such as grouse, partridges, and woodcocks, and occasionally hares and rabbits. A good dog is also essential to assist in starting and retrieving the game.

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Hawkins. British light cruiser, designed during the Great War and completed in 1919. Built at Chatham, her length is 563 ft., tonnage 9,750, and engine power 60,000 h.p. giving an estimated speed of 30 knots, which was exceeded on trials. She carries seven 7.5-inch and eight 3-inch guns. The Hawkins is oil-burning, and cost about £750,000. She is the first British warship to be fitted with a recrea-

tion room for the crew, barber's shops, etc. She served her maiden commission as flagship of the China squadron. Sister ships to the Hawkins are the Effingham, Frobisher, Raleigh, and Vindictive.

Hawkins OR HAWKYNs, SIR JOHN (1532-95). English sailor.

Second son of William Hawkins, a sea captain, he was born at Plymouth and was admitted a freeman of that city in 1556. Until 1561 he was engaged in voyages to the Canary Islands. In 1562, in command of



Sir John Hawkins
English sailor

From an old print

three vessels, he sailed to Sierra Leone, seized 300 negroes, and shipped them to Hispaniola, where he exchanged them for merchandise, which he brought to England and sold to great advantage. Backed by persons of influence, he sailed again from Plymouth, on the Jesus of Lübeck, with three other vessels, in 1564, obtained another cargo of negroes and transported them to Venezuela, where, after some difficulty, he disposed of them to the Spaniards.

The success of these voyages induced Hawkins to fit out another expedition in 1567, and he sailed on the Jesus with five other vessels, one of which, the Judith, was commanded by Francis Drake (*q.v.*). At Sierra Leone he plundered Portuguese vessels of a vast sum of money and goods, and with a cargo of 500 negroes crossed to S. America, trafficked with the Spaniards, and was finally driven by bad weather into the Mexican port of Vera Cruz.

The arrival of a Spanish fleet caused friction with the English, which soon developed into a fight, in which Hawkins lost the greater part of his treasure, and saved but two boats, in which, after great hardships, he reached England. He

had left many of his shipmates in the hands of the Spaniards, but by a curious piece of cunning, in which he was seconded by Burghley (*q.v.*), he secured their release, and at the same time was offered a bribe of £40,000 from the king of Spain to enter his service. He accepted the bribe but remained loyal to Elizabeth. In 1572 he was M.P. for Plymouth and became treasurer and comptroller of the navy, using his knowledge of seamanship to introduce many improvements. At this time he entered into partnership in a shipbuilding business with Richard Chapman of Deptford, making thereby a fortune.

On the coming of the Armada, 1588, Hawkins as rear-admiral was in command of one of his own vessels, the Victory, and did excellent service, especially off the Isle of Wight, for which he was knighted on the deck of the Ark. In 1590, together with Frobisher, he undertook a cruise to Portugal; in 1592 he founded the Sir John Hawkins Hospital at Chatham, and in 1595, under the command of Drake, he sailed once again to the Spanish Main, where he died of fever, off Puerto Rico, Nov. 12, 1595, and was buried at sea.

Hawkins OR HAWKYNs, SIR RICHARD (c. 1562-1622). English sailor. The only son of Sir John Hawkins, he sailed to the W Indies in 1582. Three years later he was captain of the Duck in Drake's expedition to the Spanish Main and the coast of Florida. He commanded the Swallow in the fight against the Armada, 1588, and in 1593 set sail in the Dainty for a voyage round the world.

Passing the Straits of Magellan, he plundered Valparaiso, 1594, and later was caught in the bay of San Mateo by two large Spanish galleons. After a fierce fight he was overpowered and taken prisoner to Lima, whence in 1597 he was sent to Spain and kept captive until 1602. He was knighted in 1603. M.P. for Plymouth and vice-admiral of Devon in 1604. In 1620 he sailed under Sir Robert Mansell as vice-admiral in the fleet sent against the corsairs of Algiers. He died in London, April 17, 1622.

Hawk Moth. Popular name for the moths belonging to the family Sphingidae. They have long, narrow fore-wings, and small hind

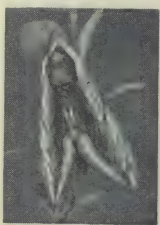


H.M.S. Hawkins. British oil-burning light cruiser.

completed in 1919

Cribb, Southsea

ones, and the antennae end in a hook. They mainly fly in the evening, and some species have a habit of hovering in the air. Their caterpillars are always smooth, and usually have a horn-like process on the hindmost segment of the body. About ten species are natives of Great Britain, among the best known being the death's head (*Acherontia atropos*), the privet and the humming-bird hawk (*Macroglossa stellatarum*) moths. The last is often mistaken for a humming-bird, as it hovers before the flowers and sips the nectar with its long proboscis. See Death's Head Moth.



Hawk Moth. *Sphinx ligustri*, the privet hawk moth

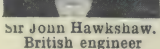
Hawk's-beard (*Crepis capillaris*). Small annual herb of the natural order Compositae. It is a



Hawk's-beard. Left, flower-heads and florets; right, toothed leaves growing from root

native of Europe and the Canaries. The leaves chiefly grow from the root, with few bold teeth; the stem leaves are broader at the base, with ears. The stem is branched, bearing small yellow flower-heads with the florets all strap-shaped. The fruits have a parachute (pappus) of unbranched silky hairs.

Hawkshaw, SIR JOHN (1811-91). British engineer. Of a Yorkshire yeoman family, he was educated at Leeds Grammar School. After three years' residence in Venezuela (1831-34), he undertook work in the German railway surveys.



SIR JOHN HAWKSHAW.
British engineer

Settling in London as a consulting engineer in 1850, he was consulted on

many important undertakings, constructed the Charing Cross and Cannon Street stations and bridges, and built the E. London Railway and the tunnel under the Severn. Made F.R.S. 1855, and knighted in 1873, in 1875 he was president of the British Association. He died June 2, 1891.

Hawkshead. Town and parish of Lancashire, England. It is picturesquely situated in a valley between Windermere and Coniston, and 2 m. N. of Esthwaite Water. Its church, S. Michael's, mainly Elizabethan, with some Norman work, restored 1876, has an altar tomb with effigies. In the grammar school, founded by Archbishop Sandys in 1585, the poet Wordsworth and his brother Christopher were pupils. Pop. 975.

Hawkstone. Parish of Shropshire, England, $4\frac{1}{2}$ m. N.E. of Wem. Hawkstone Park, once a seat of Viscount Hill (q.v.), is situated under the N. slope of the Hawkstone hills, in extensive and beautiful grounds. The brick and stone mansion, partly of the time of Queen Anne, attracted the admiration of Dr. Johnson, who visited the place with the Thrales in 1774.

Hawkweed (*Hieracium*). Large genus of perennial herbs of the natural order Compositae. Natives



Hawkweed of the Mouse-ear variety.
Hieracium pilosella

of the N. temperate and Arctic regions, they have milky juice and alternate leaves. The flower-heads are yellow or orange with the florets all strap-shaped. One of the best known species is the mouse-ear hawkweed (*H. pilosella*), common on banks, with downy, lance-shaped or spoon-shaped leaves and solitary pale-yellow flower-heads.

Hawkwood, SIR JOHN (d. 1394). English soldier. His birth and parentage are uncertain, but he was probably a London apprentice. He won fame in the wars of Edward III, being made a knight. After the peace of Brétigny, in 1360, he became the captain of a band of mercenaries, called the White Com-

pany, at the head of which he won his great reputation. He fought for whoever would pay for his services — the Visconti, Pisa, and for and against the Pope. In 1375

Florence bought his services, and, save for one or two intervals, he remained in that city's pay until his death. He died in Florence; later his remains were carried to England, and were probably buried at Castle Hedingham, in Essex.

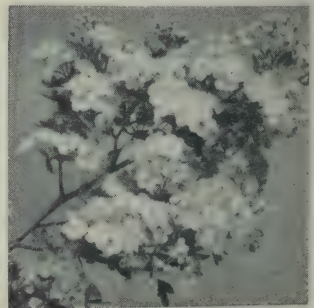
Haworth. Village of Yorkshire, England. It is situated in the West Riding, $3\frac{1}{2}$ m. S.W. of Keighley, on a branch line of the M.R. Its chief associations are with the Brontës (q.v.), and the Haworth Round established by the Rev. William Grimshaw, rector of Haworth, 1742-63, and incorporated with Methodism, under John Wesley. Ponden Hall, on the hill-top above the village, is regarded as the original of Emily Brontë's Wuthering Heights. The 14th century parish church, of which Patrick Brontë was curate, 1820-61, was, with the exception of the tower, rebuilt in 1879-81. Here is the Brontë museum, opened May, 1895. Pop. 6,505.

Hawser (Fr. *hausser*, to raise). Stout rope of hemp or wire used aboard ship, and by tugs for towing purposes. The hawse (Icelandic *háls*, neck) holes are the two large apertures at the bows of a vessel through which hawsers and anchor chains run. See Rope.

Hawthorn, WHITETHORN OR **MAY** (*Crataegus oxyacantha*). Small spiny tree of the natural order Rosaceae. It is a native of Europe, N. Africa, N. and W. Asia. The leaves are wedge-shaped, variously cut into lobes; flowers are white,



Sir John Hawkwood,
English soldier



Hawthorn. Spray of blossom

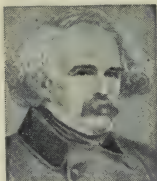
in numerous clusters, fragrant, almost hiding the foliage by their abundance. See Bud.

Hawthorn. Suburb of E. Melbourne, Australia. Pop. 27,795. See Melbourne.

Hawthornden. Village of Midlothian. It is 8 m. S.E. of Edinburgh, and is a station on the N.B. Rly. It is famous for its beautiful glen, through which the Esk flows, and for the fact that the house here was long the seat of the Drummonds. See Drummond, W.

Hawthorne, CHARLES WEBSTER (b. 1872). American artist. Born in Maine, Hawthorne studied art at the National Academy of Design, and worked for a time in Europe. He taught drawing and painting in New York and at a summer school near Princeton, Mass., and is well known in America for his clever portrait work and skilful renderings of domestic and out-of-doors life. Examples of his work are to be seen at the Metropolitan Museum, New York.

Hawthorne, NATHANIEL (1804-64). American novelist. Born at Salem, Massachusetts, July 4, 1804,



his ancestors being among the first settlers, he was educated at Bowdoin College, in Brunswick, Maine, where he made the acquaintance of Longfellow. From 1825-39 he lived almost as a recluse, publishing his first book of short stories, *Twice Told Tales*, in 1837. In 1842 he brought out a second series, later volumes of stories being *Mosses from an Old Manse*, 1846, and *The Snow Image and Other Tales*, 1851. Many of these stories are tinged with that preoccupation with sin, conscience, and evil which was the emotional residuum of the author's Puritan ancestry.

In 1850 appeared his masterpiece, *The Scarlet Letter*, a study

of the ravages made by a secret sin of adultery in the hearts and consciences of husband, wife, and lover. This fine work of imagination, wrought with the felicity of phrasing and exquisite rhythm that set its author high among writers of prose, was followed in 1851 by *The House of the Seven Gables*, a story of the decay of a family doomed to bear an hereditary curse.

In 1852 Hawthorne brought out *The Blithedale Romance*, a satire on those reformers who, lacking human nature themselves, think they can ameliorate it in others. In 1860 appeared his fourth and last romance, *Transformation*, or *The Marble Faun*. He died at Plymouth, New Hampshire, May 19, 1864. He had held appointments under the American Government at Boston, Salem, and at Liverpool, England. See Concord; Emerson; consult also Works, ed. G. P. Lathrop, 13 vols., 1893-94; Life, J. Hawthorne, 1885; *Memories of Hawthorne*, R. H. Lathrop, 1897.

Hawtre, SIR CHARLES (1858-1923). British actor. B. Sept. 21, 1858, he was educated at Eton and Rugby, his first appearance being in 1881 at the Prince of Wales's Theatre, under the name of Bankes. In 1884 he produced *The Private Secretary*, a comparative failure until he transferred it to the Globe Theatre and himself played the part of Douglas Cattermole, when it achieved an extraordinary success and ran until 1886. In 1885 he became manager of Her Majesty's and in 1887 he took over the management of The Comedy.

In 1901 he went to New York and appeared in *A Message from Mars*, which he brought to London in 1905. He produced many successful plays, and acquired great popularity. Knighted in 1922, he died July 30, 1923.

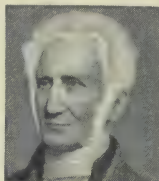


Sir Charles Hawtre,
British actor
Foulsham & Banfield

Hawtre, EDWARD CRAVEN (1789-1862). Headmaster of Eton. Born at Burnham, Bucks, May 7, 1789, his father was a clergyman. He was educated at Eton and King's College, Cam-

bridge, and after taking his degree became an assistant master at Eton, Keate then being the head.

In 1834 Hawtre was elected headmaster, and he showed himself one of the greatest the school had ever had. The buildings were enlarged, the chapel was restored, and several reforms were carried out. In 1852 he resigned and was chosen provost of Eton. He became vicar of Mapledurham, and died Jan. 27, 1862.



Edward C. Hawtre,
Headmaster of Eton

HAY and **HAYMAKING.** Hay is the dry fodder made from grass, clover, or other herbage. It may be grown on either permanent or temporary grass lands (see Grass). The average percentage composition is as follows, that of grass being added for purposes of comparison. (1) Meadow Hay: water 17'90; albuminoids 7'25; digestible carbohydrates 46'13; fibre 22'62; ash 6'10. (2) Clover Hay: water 18'60; albuminoids 12'50; digestible carbohydrates 36'33; fibre 25'65; ash 6'92. (3) Grass: water 73'67; albuminoids 2'15; digestible carbohydrates 15'02; fibre 7'36; ash 1'80.

Hay is one of the most important feeding-stuffs produced on the farm, making up part of the rations given to horses, cattle, and sheep, especially during the winter. Haymaking is one of the most critical farming operations, being dependent on the weather, and considerable importance is attached to weather forecasts, which the Board of Agriculture supplies by wire. As it is the object to secure the nutriment in the stems and leaves, cutting must be done before the seeds have been formed.

Although the scythe is not obsolete, most of the hay crop is cut by the mowing machine, in swathes of from 4 ft. to 8 ft. long (see Scythe; Mowing Machine). These have to be spread out or turned over ("tedded"). The hay kicker or tedder lifts the hay and spreads it out to dry, much after the style of the hand-fork. The haymaking machine consists of a number of curved tines attached to an axle and caused to revolve rapidly. When they do so one way, the herbage is thrown over the machine on to the ground; if the action is reversed, the hay is turned over. The latter process can be effected by a swathe turner, which deposits the turned herbage on the dry spaces between the swathes.



Hawthorne. The Old Manse, Concord, Mass., where Nathaniel Hawthorne wrote *Mosses from an Old Manse*

Before special machines were invented the made hay was dragged by wooden rakes into a series of wind-rows, subsequently forked into haycocks as a protection against rain, and also for convenience in carrying. The former part of this process is now generally carried out by a horse-rake, consisting of a series of long curved tines that can be lifted up to drop the hay in a wind-row from time to time. These rows are at right angles to the line of progress, but some machines have a side-delivery arrangement for depositing the hay in a continuous wind-row parallel to the direction of movement.

The carrying of the hay when ready is facilitated by a number of mechanical devices. If the rick is to be made in the same field, much labour is saved by using a sweep rake. This consists of a two-wheeled wooden frame 14 ft. wide, provided with long tines that are thrust forwards under the hay. The driver is seated at the back, and there is a horse on each side. When the rick is to be made at some distance, the hay is carried in carts, which may be filled by a hay loader. A stacker or elevator is often used for conveying the hay from the carts to the top of the rick.

In building up a rick or stack special attention is paid to the "walls," which must be plumb. The fermentation necessary to secure a good product involves the exclusion of air, so the hay, as added to the rick, must be evenly spread and well trampled down. The centre must be somewhat raised, or water may drain in from the outside. Hay should be dry when stacked, otherwise there will be over-fermentation, which will result in inferior quality, and may even generate enough heat to set the rick on fire. To avoid risk the temperature should be tested occasionally by a thermometer; all goes well up to about 140° F., but the rick must be opened out to check fermentation by admission of air if 150° F. is reached. *See* Barn; Farm; Harvest.

Hay. River of Canada, in the prov. of Alberta and the N.W. Territories. Rising on the frontier of British Columbia and Alberta, it flows N.E. and N. through Lake Hay, and discharges into the S. extremity of the Great Slave Lake. On it there are two magnificent cataracts, one of them, the Alexander, falling over 250 ft. Its course is about 352 m.

Hay. Township of New South Wales. It stands on the Murrumbidgee river, 460 m. W.S.W. of Sydney. It is the centre of the rich Riverina district. Pop. 2,461.

Hay, IAN (b. 1876). Pen-name of John Hay Beith, Scottish novelist. Born April 17, 1876, he was educated at Fettes



Ian Hay,
Scottish novelist
Russell

College and S. John's College, Cambridge. Having graduated, he became language master at his old school, but soon began to write. In 1907 appeared *Pip*, which was followed by *The Right Stuff*, 1908; *A Man's Man*, 1909; *A Safety Match*, 1911; *Happy Go Lucky*, 1913; *A Knight on Wheels*, 1914; and *The Lighter Side of School Life*, 1914. His books have a masculine vigour, are impregnated with the public school atmosphere, and abound in humour.

In 1914 he joined the Argyll and Sutherland Highlanders, with a battalion of which he went to France, when he became captain and won the M.C. This early experience gave him the material for his book, *The First Hundred Thousand*, a vivid description of the training of a Highland battalion, predominantly humorous in tone, but containing passages of real pathos. After this appeared *Carry On*, a Sequel to *The First Hundred Thousand*, 1917, and *The Last Million*, 1919. His play, *Tilly of Bloomsbury*, an adaptation of *Happy Go Lucky*, was produced at the Apollo Theatre in 1919. In 1921 *The Safety Match*, a dramatization of his novel of the same name, was produced at The Strand.

Hay, JOHN (1838-1905). American diplomatist, journalist, and author. Born at Salem, Indiana.

Oct. 8, 1838, he was called to the bar in 1861. He was assistant private secretary to President Lincoln, 1861-65, and was for some time editor of *The New York Tribune*. After filling several diplomatic posts in Europe, he was ambassador to Great Britain, March 19, 1897-Sept. 20, 1898, and afterwards secretary of state under McKinley and Roosevelt until his death. His tenure of office was highly successful, especially in the department of foreign affairs. He was instrumental in securing the

"open door" in China, 1899; negotiated the Hay-Pauncefote treaty, 1901, dealing with the construction of the Panama Canal; settled the Alaska boundary dispute between Canada and the U.S.A., 1903, and carried through more than 50 treaties, the result of which was to increase the prestige of America throughout the world. He died at Newburg, New York, July 1, 1905. Hay's chief works are: *Abraham Lincoln* (with J. G. Nicolay), 1890, the standard life of the President, and *Pike County Ballads*, 1871. *See* Life, L. Sears, 1914.

Hayashi, COUNT TADASU (1850-1913). Japanese statesman. Born at Sakura. Jan. 22, 1850, he was educated in England and entered the Japanese diplomatic service. Occupying a post in the foreign office, 1891-95, he was appointed minister to China in the latter year, and from 1897-



Count Hayashi,
Japanese statesman
Elliott & Fry

99 represented Japan in Russia. In 1900 he was made ambassador to London, where his diplomacy and statesmanship were evinced by the treaties between Great Britain and Japan, which he carried through in 1902 and 1905. Returning to Japan as foreign minister, 1906-8, he held the portfolio of commerce from 1911 until his death, July 10, 1913. A namesake, Baron Gonsuke Hayashi (b. 1860), became ambassador in London, Sept., 1920, after having held various high positions at home.

Haybes. Town of France, in the dept. of Ardennes, S. of Givet. Burnt and reduced to ruins by the Germans on Aug. 24, 1914, it was "adopted" by Stockport in 1920, under the arrangement by which a number of British towns undertook to help in the re-establishment of French and Belgian towns and villages devastated in the Great War.

Hay-Box Cookery. Fireless cooking in which tightly packed hay conserves the heat and continues the process of cooking food which has already been brought to the boil on a fire. An old practice, it is largely employed in Norway and Sweden and the U.S.A., while it is also gaining favour in Great Britain. The apparatus consists of a large wooden box or trunk lined stoutly with paper and filled with hay. A cushion of blanket or flannel stuffed tightly with hay exactly fits the top of the box, and the lined lid of the latter presses down on to it. The food is brought to the boil



John Hay

and cooked for a few minutes on the fire in a covered fireproof vessel, which is then wrapped in a newspaper or piece of flannel and put at once into the box. The hay is



Hay-box Cookery. The box with utensils and close-fitting lid

packed around and over it, the cushion placed on the top, and the lid, pressed down with weights, keeps all secure and excludes the air. After removal from the hay box, the food is again brought to the boil on the fire.

An improved apparatus has a lid to the box made of two skins of sheet iron or aluminium, with asbestos packing between. This forms a better non-conductor of heat than hay. Flat, round irons about $\frac{3}{4}$ in. in thickness, heated and placed one beneath and one on the top of the vessel in the box, help to retain the heat to a greater degree and impart a uniformly thorough action. By this method of cookery fuel is saved and the volume of the food is less reduced than when fire is wholly employed. The process is much slower, the time varying from one to six hours and more, according to the nature of the article cooked. The hay box may be used as a refrigerator, for, as it conserves heat, so in the same way will it keep food cool. *See Cookery.*

Haydn, FRANZ JOSEPH (1732-1809). Austrian composer. The son of a wheelwright, he was born at Rohrau, near Vienna, March 31, 1732. He became a chorister in S. Stephen's Cathedral, Vienna, where he obtained his early musical training, and after leaving there gained a precarious living by teaching.

He managed, however, to devote much time to study and composition, and in order to persuade Porpora (*q.v.*), the great teacher of singing, to give him the benefit of his instruction, he entered his service as accompanist and valet.

Haydn's compositions and his connexion with Porpora having brought him into notice, he was appointed in 1759 director of the private band of Count Morzin, and shortly afterwards composed his first orchestral symphony. In 1761 he entered the service of Prince Anton Esterhazy, and on his death continued with his brother Nicholas.

Eventually he became director of the music of the prince's private chapel, and had under his control an orchestra and a choir. This gave him unrivalled opportunities for studying the possibilities of the orchestra.



From a painting

On the death of Prince Esterhazy in 1790, Haydn was persuaded to visit England, and the success of this visit induced him to pay a second in 1794. During these visits he composed some of his finest symphonies. His oratorio, *The Creation*, was produced at Vienna in 1798, and *The Seasons* in 1801. Haydn's importance in the history of music is due to the character of his numerous instrumental works. The best of these are much more mature in style and definite in form and show more skill in the treatment of the orchestra than the works of earlier composers.

The total volume of Haydn's work is very great; there are about 150 symphonies, 77 quartets, and some 40 trios, with a large body of religious music and songs. But he was not, according to his own account, a quick worker, and yet scarcely ever is the freshness and clarity of his inspiration affected by his deliberate methods of work. The famous national anthem of Austria, also familiar as a hymn-tune, was composed in Vienna in 1797. He died in Vienna, May 31, 1809.

Haydock. Urban district of Lancashire. It is 3 m. S.E. of St. Helens, having a station on the G.C.R. The chief industries are coalmining and ironfounding. Race meetings are held in Haydock Park. Pop. 9,700.

Haydon, BENJAMIN ROBERT (1786-1846). British painter and author. Born at Plymouth, Jan.

26, 1786, he studied at the R.A. schools. His *Death of Dentatus*, 1809, and *Judgment of Solomon*, 1814, won prizes from the British Institution, but Haydn, at this time, jeopardised his prospects by quarrelling with the Academy. After a stormy career, during which he was twice imprisoned for debt, he was ignored in the Westminster Hall competition of 1843—his own idea—and failed with an exhibition of his own works at the Egyptian Hall in 1846, the result being that he committed suicide in his studio, June 22, 1846.



B. R. Haydon

After G. M. Zorn

Haydon's work as an historical painter was far above the level of his time, although somewhat hard and repellent. One may cite his *Christ's Entry into Jerusalem*, 1820; *Wellington at Waterloo*, 1839; *Banishment of Aristides*, 1846; *Nero playing during the burning of Rome*, 1846. He was the author of an autobiography, published by his widow in 1847; *Lectures on Painting and Design*, 1844, and other books on art.

Hayes. Urban dist. of Middlesex, England. It is 11 m. W. of Paddington and 1 m. N. of Hayes and Harrington station on the G.W.R., with the Paddington Canal on the E. and the Grand Junction Canal on the S. Gramophones, printing presses, aeroplanes, seaplanes, and pianos are made.

The manor, before the time of Henry VIII, belonged to the see of Canterbury. The parish church of S. Mary, restored in 1873-74, has a 13th century tower, a 16th century wooden roof to the nave, a lych gate, and some interesting monuments. The rectory is on the site of the old manor house. N.E. is Yeading, a brickmaking centre; N.W. is Dawley Court, once the home of Bolingbroke, and later that of the De Salis family. At Botwell, to the S., are marble, granite, and slate works.

Hayes. Parish and village of Kent, England. It is situated on the slope of a hill and the edge of a common, 15 m. from Charing Cross, between West Wickham and Woodside, on a branch of the S.E. & C. Rly. Hayes Place, near the church, was the favourite residence of the 1st earl of Chatham, who died here, and the birthplace of his son, William Pitt. General Wolfe dined here on the eve of his departure for Quebec. The Early English church

of S. Mary, built on the site of a Roman structure, and containing brasses and other monuments of interest, was restored in 1861-62. Hayes Common, a breezy stretch of uplands, 220 acres in extent, covered with heather, bracken, bramble, and hawthorn, commanding picturesque views, and a favourite resort of cyclists, was secured to the public in 1869. Sir Vicary Gibbs had a villa on Hayes Common; and Henry Hallam died in Hayes parish. See Keston.

Hayes, CATHARINE (1690-1726). English murderess. Born near Birmingham, she married John Hayes, a carpenter, and lived with him in Tyburn Road, now Oxford Street, London. On March 1, 1726, with the aid of two lodgers, Wood and Billings, she murdered her husband, whose head was thrown into the Thames at Westminster, and whose body, cut into pieces, was secreted in Marylebone Fields. The head being found and identified, Hayes was sentenced to be burnt alive, and her two accomplices to be hanged. Wood died in Newgate; Billings was hanged in chains. Hayes, who tried to poison herself, was executed at Tyburn, May 9, 1726. Thackeray based his story, *Catherine*, 1839-40, upon her career.

Hayes, RUTHERFORD BIRCHARD (1822-93). American statesman. Born in Delaware, Ohio, Oct. 4, 1822, he was educated at Kenyon College and studied law at Harvard, being admitted to the bar in 1845. Having built up a successful practice in Cincinnati, he joined the Union

army and served with distinction throughout the Civil War. Member of Congress, 1865-67, and governor of Ohio, 1868-72 and 1876-77, he stood for the presidency in 1876 on the Republican ticket, was adjudged to have a majority, and was finally declared elected by one electoral vote. He did much to improve the financial position of the country and pursued a conciliatory policy towards the southern states. After his term he retired from public life and died at Fremont, Ohio, Jan. 17, 1893. See *Life*, W. D. Howells, 1876.

Hay-fever. Catarrhal affection of the mucous membrane of the eyes, nose, mouth, and air-passages due to irritation by the pollen of various grasses and plants. The

disease is common all over Europe and N. America, and chiefly occurs during the hay season. The symptoms are those of a heavy cold with much sneezing and headache. Asthmatical attacks are not uncommon. Sufferers from hay-fever should avoid agricultural districts during the summer months. Mountainous regions or the seaside are the best places to live in. The bedroom windows should generally be closed at night. Tonic treatment and local applications and sprays sometimes give relief. "Pollantin," an anti-toxic serum, has proved efficacious in many cases.

Hayling. Island of Hampshire. It lies between the harbours of Langstone and Chichester, a short distance from the mainland. About 4 m. from N. to S., its area is 10 sq. m.; it is popular as a seaside resort. There are golf links and other attractions. The village of S. Hayling, which has a station on the L.B. & S.C. Rly., has a fine old church dedicated to S. Mary. There is also a station at N. Hayling, which is 2½ m. from Havant and 69 from London. The island was long the property of the Benedictines.

Hay Loader. Small elevator for loading hay and other crops into wagons. It consists essentially of a trough, along the upper side of which endless chains studded with small forks move from below upwards, returning along the under.

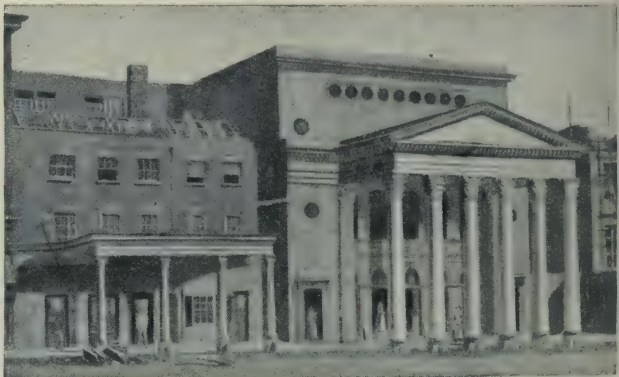
Haymarket. London street extending from the E. end of Piccadilly to Pall Mall, S.W. It was so named from the market for hay and straw held here before its removal to Cumberland Market, Regent's Park, in 1830. The Carlton Hotel and His Majesty's Theatre, on the W. side, cover the site of the King's Theatre or Italian Opera House, later Her Majesty's Theatre, demolished in 1893. The Haymarket

Theatre is on the E. side. Near are the Civil Service Stores and Pantons Street, in which is the Comedy Theatre.

Thynne of Longleat was murdered in this street by assassins hired by Count Königsmarck, 1682. Dr. Johnson's friend, Baretti, mortally wounded a man who attacked him here in 1769, and after being tried for murder was acquitted. Addison lodged for a time in this street, with which are also associated the names of George Morland, Sir Samuel Garth, and Mrs. Oldfield.

Haymarket Theatre. London theatre. The original Haymarket Theatre, in which Fielding produced *Tom Thumb* the Great, and of which he became manager in 1734, was opened Dec. 29, 1720, with a French comedy, *La Fille à la Mode*. Later famous managers were Charles Macklin, Samuel Foote, 1747-67, and the two Colmans. Bannister, Elliston, and Liston all made their first appearance in the Little Theatre, as it was called, and here John Poole's *Paul Pry* was first performed. The second Haymarket Theatre, which stands on a site immediately adjoining that of the first, was opened July 4, 1821.

At the close of Buckstone's management in 1879, it passed into the hands of the Bancrofts, who reconstructed it, abolishing the pit and adding the pit area to the stalls. Under the Bancrofts, 1880-85, it enjoyed great popularity, which continued undiminished under Beerbohm Tree, 1887-95. From 1896 to 1905, under the joint management of Cyril Maude and Frederick Harrison, it won a new lease of success, which has lasted almost uninterruptedly since 1906, when the latter became sole lessee. See *The Haymarket Theatre*, Cyril Maude, 1903.



Haymarket Theatre. Reproduction of an old print showing the Haymarket Theatre, which was opened in 1821, replacing the old theatre, seen on the left

Haynau, JULIUS JAKOB, BARON VON (1786-1853). Austrian soldier. A natural son of the elector, of



Baron Haynau,
Austrian soldier

Hesse, William IX, he was born at Cassel, Oct. 14, 1786. Having entered the Austrian army, he saw service in the Napoleonic Wars. In the Italian campaigns of 1848-49, in which he held a high command, he became prominent for his flogging of women at the taking of Brescia, and for other atrocities. In the Hungarian insurrection of the same period he was in command of the Austrian forces, and his conduct of the campaign, in which he admittedly showed great military talents, was again marred by ruthless ferocity. He decisively defeated the Hungarians near Temesvar. In 1850 he came to London, but his reputation had preceded him, and he was badly mauled by the draymen of Barclay and Perkins's brewery. He died at Vienna, March 14, 1853.

Hayne, ROBERT YOUNG (1791-1839). American politician. Born in Colleton county, S. Carolina,



Not of Hayne
From an engraving

Nov. 10, 1791, he took part in the war of 1812 against Great Britain, and was a member of the U.S. Senate, 1823-32. He was a pronounced free trader and upholder of the doctrine of State Rights—that the Federal Government had no right to interfere with the internal affairs of the individual states. The debate on S. A. Foote's resolution, Dec. 29, 1829, for restricting the sale of public lands, which in reality raised the question of the relation between the government and the states, led to the famous passage of arms between Hayne and Daniel Webster.

Hayne maintained that the government was a party to a compact, and that any state had the right to nullify the carrying out of any government measure in its territory if it considered such measure to be an infringement of the contract. The convention of S. Carolina, Nov. 19, 1832, passed the Ordinance of Nullification as a protest against the tariff measures passed by Congress, and threatened secession if they were enforced.

Civil war seemed likely, but the matter was settled by a compromise. Having resigned his seat in the Senate, Hayne became governor of S. Carolina. He died at Ashville, N. Carolina, Sept. 24, 1839. See *Life*, by his nephew, P. H. Hayne, 1878; R. Y. Hayne and his Times, T. D. Jervey, 1909.

Hay-Pauncefote Treaty. Agreement concluded in 1901 between John Hay, U.S. secretary of state, and Lord Pauncefote, British ambassador at Washington. The treaty was negotiated to replace the Clayton-Bulwer Treaty of 1850 (*q.v.*). Its substance was that Britain conceded to the U.S.A. the sole right to construct, maintain, and police the canal across the central American isthmus, while the U.S.A. agreed that the canal should be open to the ships of all nations on equal terms.

In view of this undertaking, Great Britain was surprised when, in 1911, Congress passed the Panama Canal Act, exempting American ships engaged in coastwise trade from canal dues. This apparent departure from the terms of the Hay-Pauncefote Treaty was defended on the ground that the clause providing for equality of treatment of the ships of all nations referred only to foreign nations. Through the influence of President Wilson, however, a more liberal view of the clause was adopted, and in 1914 an act repealed the exemption granted to American coastwise traffic.

Hayter, SIR GEORGE (1792-1871). British artist. Born in London, Dec. 17, 1792, he studied at the

R.A. schools. After a brief period at sea and three years' study in Rome, he settled down in London to portrait and miniature painting. His reputation was already established when he was appointed portrait and historical painter to Victoria on her accession, 1837, and in 1838 he exhibited at the R.A., The Queen seated on the Throne in the House of Lords, now in the Guildhall, London. His picture of the Coronation and the Marriage are now in the royal collection at Windsor. His appointment in 1841 as principal painter to the queen was followed next year by a knighthood. His court and historical pictures were exhibited at the British Institute. He died Jan. 18, 1871. See Clifden.



Sir George Hayter,
British artist
Self-portrait

Hayward, ABRAHAM (1801-84). British essayist. Born at Wilton, Wiltshire, Nov. 22, 1801, and edu-



Abraham Hayward,
British essayist

cated at Blundell's School, Tiverton, he was called to the bar, but never had more than a moderate practice, although he founded, and for many years edited, *The Law Magazine*. He was an assiduous contributor to the periodical press, on politics, social and other topics, and an authority on gastronomy. His *Art of Dining* enjoyed great vogue; also his own dinners at the Temple, where he was in the habit of entertaining notable people. Hayward was a brilliant conversationalist, and a great whist player. He edited Mrs. Piozzi's *Autobiography*, 1861, and *Diaries of a Lady of Quality*, 1864. He died in London, Feb. 2, 1884.

Hayward, Tom (b. 1871). English cricketer. Born at Cambridge, March 29, 1871, he joined the

ground staff at the Oval in 1891. He first played cricket for Surrey in 1893, and for twenty years was one of the mainstays of the county team. His best season was 1906, when he scored 3,518 runs, and his highest innings was 315 not out against Lancashire at the Oval in 1898. Three times he made two scores of over 100 each in a single match, four of these centuries being obtained in one week, a record in first-class cricket. Altogether he scored over 100 runs on 104 occasions. Hayward played several times in test matches against Australia. See *Cricket*.



Tom Hayward,
English cricketer

Hayward's Heath. Urban dist. and market town of Sussex, England. It is 38 m. S. of London on the L.B. & S.C. Rly. An important cattle market is held here. The council maintains a public hall and library, has erected council offices and provided two parks. Market day, Tues. Pop. 4,800.

Hazara. Semi-nomad mountaineers between the upper Helmund valley and the Hindu Kush, in N. Afghanistan. Lowlier than the more Persianised Aimak, on the W., they are simple-minded, priest-ridden, Mongolian Shiah Moslems, short, squat, robust, and scant bearded. They furnish pioneer companies to the Afghan and Indian armies. *Pron. Hazahra.*

Hazara. District of India, in the N.W. Frontier Province. The district contains extensive forests, and the cultivated area is small. Maize, wheat, and barley are the chief crops. Mineral resources include coal, limestone, building stone, gypsum, and iron. It exports grain and imports piece-goods, indigo, salt, etc. Considerable unrest occurred in 1920 among the tribesmen, fostered by Afghan agitators, leading to demonstrations of disloyalty in Hazara, and to attacks by Black Mountain tribesmen on the British military camp at Oghi. Area, 3,062 sq. m.

Hazard. Game played with a pair of dice by any number of persons. The first throw of the person taking the box is a chance for the other players, called a main, which must be above 4, and not exceeding nine. Consequently he must continue throwing until he produces 5, 6, 7, 8, or 9. The holder of the box then throws for his own chance, which must be above 3, and not exceeding 10. Should he at the first throw produce two aces, termed crabs, he loses his stake, whatever the main may be. After throwing the main and his own chance, the caster continues until one or the other is repeated.

Should the main be 7, and the caster throw 7 or 11 immediately after, it is called a nick, and he wins. If 8 be the main, and the caster produces in the next throw 8 or 12, he scores a nick, and wins. Similarly, 6 being the main, he would also win on the nick by throwing 6 or 12. 11 is crabs to every other main but 7; and 12 is crabs to all mains but 6 or 8. The players place their money upon the table, and the caster indicates which particular person's stake he is throwing against by knocking the box on the table immediately in front of it; or, he may offer to throw against all stakes laid within a certain circle.

Hazaribagh. Dist., subdiv., and town of Bihar and Orissa, India, in Chota Nagpur Division. It has an area of 7,021 sq. m., of which about one-third is under cultivation, rice being the chief crop. Hazaribagh is the centre of a considerable coal industry, Giridih being one of the most important

coalfields in the country, while the Bokaro-Ramgarh field promises to be of great importance. Exports include coal and coke, while food grains and cotton piece-goods are imported. Hazaribagh town is of little commercial importance. Pop., dist., 1,288,600; town, 17,000.

Haze. Low visibility of the atmosphere, usually due to dust or smoke. Haze is commonly experienced over most of the land surfaces of low elevation, but is rarely observed over the oceans and on high mountains, as in these regions the air is free from dust of any kind. Fine particles of dust carried from desert areas by the wind, and the smoke from forest fires or burning peat bogs, as well as that due to factories, etc., often cause a haze which extends over hundreds of square miles. Haze is most commonly experienced during spells of dry weather, because rain washes dust from the air, which is almost invariably clearer after a shower. Haze due to these causes must not be confused with the haze due to a damp atmosphere which is, in reality, an incipient fog. *See Atmosphere.*

Hazebrouck. Town of France, capital of an arrondissement, in the dept. of Nord. An important rly. junction, it lies on the canalised river Bourre, 32 m. W.N.W. of Lille. Among its industries are tanning and flax spinning, and the manufacture of oil and soap. It was an important strategic centre and railhead in the Great War. The Germans shelled it at the end of 1917 by a long-range gun, and in April, 1918, it was seriously threatened by the German advance, and its civilian population was evacuated. The town was freed from danger of further destruction by the German withdrawal on to Armentières in Sept., 1918. Pop. 12,500.

Hazel (*Corylus avellana*). Large shrub of the natural order *Amen-taceae*. It is a native of Europe, N. Africa, and temperate Asia. The leaves are alternate in two rows, roundish, with an unequal heart-shaped base, doubly toothed. The male flowers are in long, pendulous catkins, formed in Sept., and mature in Feb.; the females resemble leaf-buds, with the crimson thread-like styles protruding. The fruit is a sweet, oily nut, enclosed in a woody shell, and this in a large, leathery bract. Filberts, cob-nuts, Barcelona, and Spanish nuts are all varieties of this species. *See Bud.*

Hazel Grove. Urban dist., in full Hazel Grove and Bramhall, of Cheshire, England. It is 2 m. S.E. of Stockport, on the L. & N.W. & Mid. Rlys. There are silk throw-



Hazel. Leaves, nuts, catkins, and female flower

ing and cotton industries. Stockport provides the district with water and gas. Pop. 9,630.

Hazen, SIR JOHN DOUGLAS (b. 1860). Canadian politician. Born June 5, 1860, at Oromocto, New Brunswick, he was educated at the collegiate school, Fredericton, and the provincial university. In 1883 he became a barrister, and began to practise in Fredericton, of which city he was mayor in 1889. In 1891 he was elected to the Dominion Parliament as Conservative member for St. John, but lost his seat in



Sir John D. Hazen, Canadian politician
Russell

1896. He entered the legislature of New Brunswick, and in 1899 was chosen leader of the opposition.

In 1908 his party was returned to power, and he became prime minister and attorney-general. In 1911 he was again elected to the Dominion House of Commons, and entered Borden's cabinet as minister of marine and fisheries. In 1917 he resigned to become Canada's permanent commissioner at Washington. In 1918 he was knighted, and in 1919 was appointed chief justice of Newfoundland.

Hazleton. City of Pennsylvania, U.S.A., in Luzerne co. Situated 1,630 ft. high, it is a popular summer resort, 28 m. S.S.W. of Wilkesbarre, on the Lehigh Valley and other rlys. It contains a public library, a high school, and a state hospital for miners. The centre of one of the most valuable anthracite regions in the U.S.A., it trades extensively in that mineral, and has

also ironworks, knitting, lumber and planing mills, and silk, shirt, and macaroni factories. It was settled in 1820, incorporated in 1856, and chartered as a city in 1892. Pop. 27,510.

Hazlitt, WILLIAM (1778-1830). British essayist and critic. Son of William Hazlitt (1737-1820), a Unitarian minister, of Irish descent, he was born in Mitre Lane, Maidstone, Kent, April 10, 1778. He was in Boston, U.S.A., with his parents, 1783-86. In 1787-93 he was living with them at Wem, Shropshire. A student in Hackney Theological College, 1793-94, he abandoned the idea of a ministerial career in 1797, met Coleridge at Wem, Jan., 1798, and on visiting him at Stowey in the following spring was introduced to Wordsworth. He studied art 1798-1805 (in Paris in 1802), painted portraits of Hartley Coleridge, Wordsworth, and Charles Lamb; and displayed a bent towards the study of metaphysics.

His earlier work included an Essay on the Principles of Human Action, being an argument in favour of the natural disinterestedness of the Human Mind, 1805, the outcome of an inquiry in which he was encouraged by Coleridge; Free Thoughts on Public Affairs, 1806; an abridgment of Abraham Tucker's Light of Nature, 1807; and Eloquence of the British Senate, a selection of parliamentary speeches with notes, 1807. On May 1, 1808, at S. Andrew's, Holborn, he married Sarah Stoddart, and settled at Winterslow, near Salisbury, Wilts, which gave its name to a volume of his essays issued in 1839.

Coming to London, 1812, he lectured at the Russell Institution on The Rise and Progress of Modern Philosophy. He was parliamentary reporter and dramatic critic of The Morning Chronicle, 1812-14, and began to contribute to The Champion, The Examiner, and The Edinburgh Review in 1814. He published The Round Table essays and Characters of Shakespeare's Plays, 1817; A View of the English Stage, 1818; Lectures on the English Poets, 1818; on the English Comic Writers, 1819; and on the Dramatic Literature of the Age of Elizabeth (delivered at the Surrey Institution), 1820. He joined the staff of The London Magazine, his essays in which appeared in Table Talk, 2 vols., 1821-22.

The years 1822-23 were notable for his visit to Scotland to secure a divorce; his temporary if passionate attachment to Sarah Walker, one of the two daughters of a Mr. Walker, in whose house at 9, Southampton Buildings, Chancery Lane,

he took lodgings in 1820, which inspired his morbidly egotistical Liber Amoris, or the New Pygmalion, 1823, new ed. by R. Le Gallienne, 1894; and the issue of Characteristics in the manner of Rochefoucauld's Maxims. In 1824 he married the widow of Col. Bridgewater, and travelled with her in France and Italy, but was left by her on the return journey.

A series of personal sketches of contemporaries, The Spirit of the Age, appeared in 1825; Notes of a Journey through France and Italy, and The Plain Speaker, Opinions on Books, Men and Things, 2 vols., in 1826; Life of Napoleon Buonaparte, 4 vols., 1828-30; and Conversations of James Northcote, 1830. His other works include A Character of Mr. Burke, 1807; A New and Improved Grammar of

mas imbibed in his youth, but kept his often violent political prejudices apart from his literary estimates. He is in the first rank of English literary critics; his literary judgements, generally, are the judgements of posterity. His style, which varies in harmony with his subject, is wholly admirable.

W. F. Aitken

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Hazlitt, WILLIAM CAREW (1834-1913). British author. Born in London, Aug. 23, 1834, he was a son of William Hazlitt (1811-93) and a grandson of the essayist. His father, who was a registrar of the court of bankruptcy, 1854-91, did a good deal of literary work. Educated at Merchant Taylors' School, William Carew Hazlitt was called to the bar at the Inner Temple, 1861. For a short time he studied civil engineering under George and John Rennie, but devoted most of his life to literary and antiquarian pursuits. He died Sept. 8, 1913. A voluminous writer, he edited Shakespeare Jest Books, 1864; Brand's Popular Antiquities, 1870; Warton's History of English Poetry, 1871; Dodsley's Old Plays, 1874-76; Shakespeare Library, 1875; Letters of Charles Lamb, 1886; and Cotton's translation of Montaigne's Essays, 1902.

He compiled English Proverbs and Proverbial Phrases, 3rd ed. 1906; and was the author of Memoirs of William Hazlitt, 1867; Handbook of Early English Literature, 1867; Bibliographical Collections and Notes, 1876-1904; Schools, School Books, and Schoolmasters, 1888; Studies in Jocular Literature, 1890; The Lambs, 1897; Four Generations of a Literary Family, 1897; Lamb and Hazlitt, 1900; The Venetian Republic, 3rd ed. 1900; The Book Collector, 1904; Faiths and Folklore, 1905; and Shakespeare: Himself and His Work, 3rd ed. 1908.

Hazor OR HAZUR. Name of several places in Palestine. The most important was a city in Naphtali (Josh. xi, 1), a little S. of Kedesh, which had a king named Jabin. It was taken and destroyed by Joshua, but having been rebuilt was fortified by Solomon (1 Kings ix, 15). It was afterwards taken by Tiglath Pileser, king of Assyria (2 Kings xv, 29). Another Hazor, known as Hazor of Benjamin, is now represented



W. Hazlitt

From a miniature by his brother John

the English Tongue, 1810; Memoirs of the Late Thomas Holcroft, 1816; and Sketches of the Principal Picture Galleries of England, 1824. Ill-health and monetary troubles darkened his later years, but his last words, uttered just before he died at his lodgings in Frith Street, London, Sept. 18, 1830, were, "Well, I've had a happy life." He was buried in the churchyard of St. Anne's, Soho. He left a son, William.

Hazlitt's life was rather sordid and stormy. His domestic relations were unhappy; at one period, when he was on The Morning Chronicle, he gave way to intemperance, facts of which those of his critics who were politically opposed to him took provocative advantage. He participated in the hopes which formed the legacy of the last decade of the 18th century; when those hopes were shattered, the reaction made him a bitter critic of humanity. Politically he was a democrat; he adhered to certain dog-

by a ruin to the N. of Jerusalem (Neh. xi, 33). The kingdom of Hazer was a district in Arabia. It is mentioned in Jeremiah (xlix, 28), but little else is known about it.

H.E. Abbrev. for His Excellency; His Eminence; High Explosive.

Head. Part of the body of an animal which contains the brain and organs of special sense. The head is divided by anatomists into the face and the cranium, which contains the brain and is covered by the scalp. (See Brain; Ear; Eye; Face; Scalp; Skull.)

The word has many other uses, mostly derived from its main one. Thus, the chief person in a society is frequently known as the head, this title being given to the chief boy in a school or form; the head-master is frequently called simply the head. It is used for the top or end of anything, examples being the head of a nail, the head on a pot of beer, a head of water, the head of a river. The head is that side of a coin which bears the figure of a head, while it is used as a synonym for beasts, as in the phrase 5,000 head of cattle.

Head, SIR EDMUND WALKER (1805-68). British administrator.

The son of Sir John Head, Bart., he was educated at Winchester and Oriel College, Oxford. For some years he was a tutor at Oxford; he was also called to the bar. In 1838 he succeeded to the baronetcy and in 1841 entered the civil service as a poor law commissioner. In 1847 he was made lieutenant-governor of New Brunswick, and from 1854-61 was governor-general of Canada. On his return to England he became a civil service commissioner. Head, who died Jan. 28, 1868, was also known as a writer on art.

Head, SIR FRANCIS BOND (1793-1875). British administrator. Born at Hermitage, near Rochester, Jan. 1, 1793, and educated there and at Woolwich, he was gazetted into the Royal Engineers in 1811. Serving in the Mediterranean and through the Waterloo campaign, he retired from

the service in 1825, and on his return from a brief visit to S. America wrote his Rough Notes of a Journey in the Pampas and Andes. In 1835 he was appointed lieutenant-governor of Upper Canada, where his administration proved a conspicuous success. He resigned in 1837 and settled in England, where he became a regular contributor to *The Quarterly Review*. Made a baronet in 1836, in 1867 he became a privy councillor. He died at Croydon, July 20, 1875.

Head's elder brother, Sir George Head (1782-1855), served for many years in the commissariat department of the army. He wrote several books and, like his brother, contributed much to *The Quarterly Review*. He died May 2, 1855.

Headache. Pain in the head. It is a symptom of a large number of pathological conditions.

Arterio-sclerosis, thickening of the coats of the arteries, is most frequently found in men of middle age and later, and is associated with gouty tendencies, Bright's disease, affections of the heart, and other disorders. Treatment of headache due to this disorder is to relieve the underlying condition.

In chronic dyspepsia the headache is associated with furred tongue, offensiveness of the breath, constipation, and discomfort after meals. In young girls the condition is often associated also with chlorosis or simple anaemia. Treatment of the underlying condition will relieve the headache.

Headache is also common in many forms of nervous breakdown such as neurasthenia, anxiety neurosis, and shell shock. The headaches abate as the general condition improves.

Migraine is a form of severe headache, the exact cause of which is unknown. It may begin with sensations of chilliness, and there is often tingling in the fingers of one hand. The vision may be blurred, and there may be partial blindness. Flashes of light are seen, and there may be coloured zig-zag lines of "fortification" figures as they are termed. Dizziness sometimes occurs, while nausea and vomiting are common. The duration of the attack varies, but usually lasts from one to three days. Treatment of any underlying bodily disorder is important. Cannabis indica, anti-febrin, and phenacetin may be administered.

Errors of refraction leading to eye-strain are

another common cause of headache. Treatment should be directed towards providing suitable glasses. Headaches also occur from toxæmia in fevers, such as typhoid, malaria, influenza, tumours and diseases of the brain, injuries to the head, and affections of the ears and nose.

A simple headache, the result of fatigue or overwork, may usually be relieved by a moderate dose of aspirin, after taking which the patient should lie down for a couple of hours. Frequently recurring headaches indicate that there is some constitutional cause which should be remedied.

Head-Deformation. Artificial modification of the form of the human skull. Widespread in primitive society, the custom, usually practised within the first year of infancy, may have originated in the accidental flattening of the back of the head by cradle-boards with hard supports instead of resilient pillows. Afterwards perpetuated intentionally as a tribal distinction, it developed two types: forehead flattening by head-boards, to emphasise the broad-headed skull, and sugar-loaf elongation by tight bandages, to emphasise the long-headed skull. Of these types, traceable among the early ancestors of the Armenians and Kurds respectively, the latter was characteristic of the ancient Crimean peoples whom Hippocrates called long-headed.

These deformities, still practised by Borneo Klemantans or land Dyak and some Melanesians, were



Wm. Head

After G. Richmond



Sir Francis Head,
British administrator

After N. Cook



Head-Deformation. Board and bandage for moulding the shape of an infant's head, Borneo. Above, deformed head of a negro baby of the Algerian interior

Ethnographical Collection, British Museum



Ten examples of Greek styles employing crowns, diadems and combs



Egyptian, worn in religious processions



Fashions set by
Roman empresses



Egyptian priest and priestesses



Lower two, Greek ;
above, Roman



Greek, left to right : two examples of leather cap (pilos) ; two Phrygian caps ; veil (kalyptra)



Four examples of elaborate Greek head-dresses ; in the centre that of a Phrygian man
HEAD-DRESS: CLASSIC TYPES ON WHICH FASHIONS HAVE BEEN FOUNDED FOR THREE THOUSAND YEARS

From Costumes of the Ancients, Thomas Hope

carried across the Pacific to America. There they occurred among the ancient Maya, Aymara and other peoples, their alien origin being confirmed by their absence from the Eskimo, Athapascan and Algonquin regions. Forehead-flattening was observed by the Natchez and some N.W. Pacific tribes such as the Chinook; S. American Indians still practise conical deformation here and there. Cranial disfigurements are not transmitted, and do not appear to affect mental vigour.

Head-dress. Anything worn upon the hair or pate. Head-ornament, amulet or decorative, was probably devised by prehistoric man prior to protective coverings. In an upper palaeolithic cave at Mentone a male skull was found, adorned with stag's teeth, fish-bones and pierced shells. On Spanish cave-portraits horns and feathers are shown. Fur caps may also have been used in that age; a neolithic site in Denmark has yielded a woollen cap.

Primitive forms of head-dress, governed by the formation of the hair and climatic conditions, include dressed hair, decorated hair, headbands, chaplets, brimless caps, brimmed hats, hoods and veils. The hair may be dyed; stiffened with protective materials, such as S. African ochre and grease, Upper Congo soot and palm-oil, Latuka interwoven bark or twine; or shorn and replaced by a wig. Decoration is widespread; with teeth or bushy animal tails, as in Australia; flowers, as in Polynesia and Burma; and leaves or gems.

Head-bands of skin, bone or fibre, used by Andamanese, Australians, Bushmen and Fuegians, suggest an ultimate palaeolithic origin, and passed in the higher civilizations into turbans and diadems. Sometimes employed for the suspension of burdens, they permit of the attachment of beads, cowries, rams' horns, wood shavings—as with the Ainu—and especially of feathers. These form the tribal or social badges of many peoples, such as the ancient Egyptian and modern Bari ostrich tips, Aztec trogon or quetzal tails, Naga horn-bill tail-feathers, Papuan paradise plumes, Maori huia feathers, and N. American Indian eagle bonnets. Chaplets of grass are worn by Malacca Sakai, flowers by Polynesians, leaves in ancient Greece, jewels in E. Tibet.

For skull-caps Hottentot women use fur, Nilotic peoples beads with cowry rims, Samoan chiefs' heirs fibre caps covered with women's hair. Tall hats, among the Kavi-rondo, sometimes reach 6 ft.

Broad-brimmed hats especially characterise S.E. Asia. The Panama hat reached Central America through medieval Spain and Morocco from pre-Christian Egypt. Hoods are found among Eskimo and some Malay women; veils among most Moslem women and Tuareg men. From remote times head-dresses have been symbols of social or professional distinction, whether it be the helmets of warrior chiefs, the coronals of married women, or those affected by medicine-men, priests, head-men or kings.

The head-dress of women has ranged through every degree of design from simple to absurdly elaborate. Among the wealthier Anglo-Saxons it consisted of a headrail or coverchief, often confined by a fillet of gold and enveloping head and shoulders and descending to the knees. In the 14th and 15th centuries the so-called steeple or horned head-dress appeared; this assumed immense proportions, varying from 18 ins. to 3 ft. in height. It was introduced from France, where a similar style is still worn by some of the peasantry. In England this was succeeded by the hood, and by the bonnet of Elizabethan times.

The reign of William III was marked by the towering head-dresses, or fontange, worn by women. Towards 1800 enormously high hair-dressing became fashionable, and a curious hood, termed a calash, was introduced. This was made on the lines of the hood of a carriage, being supported by a framework of whalebone and pulled over the face by means of a string. *See Cap; Costume; Hat.*

Headfort, MARQUESS OF. Irish title borne since 1800 by the family of Taylour. Thomas Taylour, an Irish M.P. and a landowner in Meath, was made a baronet in 1704. His grandson, Sir Thomas, was made Baron Headfort in 1760 and earl of Bective in 1766. The 2nd earl was made a marquess in 1800, this being one of the peerages bestowed to facilitate the passing of the Act of Union. In 1831 the 2nd marquess was made a baron of the United Kingdom. Headfort is in Meath, where the marquess has his residence. His eldest son is known as earl of Bective.

Head-hunting. Custom among some primitive peoples of slaying strangers or enemies in order to utilise their heads as cult-objects or trophies. As developed out of human sacrifice by the Austric-speaking peoples of S.E. Asia and its archipelagos, its animistic purpose was partly spirit-worship, partly a productive rite. Until

recent years it was practised mostly by ceremonial expeditions, in Austroasia (Naga, Wa); Indonesia (Dyak, Igorot, primitive Formosans); Melanesia (Solomon islands); Polynesia (Maori). Sea Dyak and Formosans engrafted upon it the derivative purpose of qualifying for manhood and marriage. In negro Africa—Nigeria, Togoland, upper Congo—the custom presents local variations. *See Head Hunters: Black, White and Brown, A. C. Haddon, 1901; Home Life of Borneo Head-hunters, W. H. Furness, 1902; The Tailed Head-hunters of Nigeria, A. J. N. Tremearne, 1912.*

Headingley. Suburb of Leeds, England. In the N. of the city, it is a residential district, and has a station on the N.E. Rly., and tramways. The corporation has a pumping station here. *See Leeds.*

Headmaster. Name given in Great Britain and elsewhere to the principal of a public or other school for boys, although a special name, e.g. rector, is used in certain cases. In addition to the Headmasters' Conference, there is in Great Britain the incorporated association of headmasters. Established in 1890, and incorporated in 1895, this consists of many of the headmasters of public secondary schools in Great Britain. The offices are 37, Norfolk Street, Strand, London, W.C.

Headmasters' Conference. Association of headmasters of public schools in Great Britain. Edward Thring, headmaster of Uppingham, inaugurated it in 1869 by calling a meeting of headmasters at his house to form "a school society and annual conference." Since then meetings have been held, generally every year, in Jan., and matters of interest to educationists discussed. In 1919 the conference numbered 122 members. It was incorporated in 1909, and the offices are at 12, King's Bench Walk, Temple, London, E.C.

Headquarters. Centre of an organization whence instructions are supplied to subordinates, and the entire enterprise controlled. In military organization, most units have their headquarters abbreviated to H.Q., which receive instructions from a higher H.Q. During the Great War the chain of communication descending from general headquarters (G.H.Q.) was to army, corps, division, brigade, battalion, and company headquarters. Each H.Q. must be in a sufficiently central position behind its line to control effectively the whole front for which it is responsible.

In a commercial undertaking, headquarters is sometimes applied

to the central offices of the board of management, whence the business can be run in all its ramifications. See Staff.

Head Resistance. Air resistance encountered by aircraft, whether heavier-than-air or lighter-than-air, in flight (*q.v.*). The pressure in front and the suction behind both enter into head resistance. To counteract it every flying machine and airship, and as many exposed parts, fittings, etc., are stream-lined as far as possible.

Headrigg, CUDDIE (CUTHBERT). Character in Scott's novel *Old Mortality*, the ploughman at Tillietudlem (Craigneath Castle), who enters the service of the hero Henry Morton. He shoots the turncoat, Basil Olifant, and so restores Lady Margaret Bellenden to her fortune and castle, and himself to his original cottage.

Head Voice. Highest part of a human voice, so called because the sensation is as of sounds originating in the upper part of the head. The term is sometimes used synonymously with Falsetto (*q.v.*). See Chest Voice; Singing; Voice.

Health. Sound condition of the entire animal organism in which all the organs function perfectly. The word preserves the A.S. *hæthl*, as to heal preserves *hælan*, both from *hæl*, hale, safe or sound. (See Public Health; Insurance, National Health.)

The widespread custom of drinking healths derives from the ancient religious ceremony of pouring libations to the gods, originally at the time of offering sacrifice, and afterwards on solemn occasions, as at ceremonial feasts. This custom was practised by the Greeks and Romans, and with other heathen customs was adapted to their own use by many Christianised peoples. The heathen tribute of honour to the gods, followed by one to the memory of the dead, became among Christians invocations to God and to the saints. From thought of the blessed dead it was a natural transition to tender thought of absent but living friends, and from them again to the friends present in the flesh.

The same sacramental aspect of the wine-cup is seen in the ancient custom of princes and knights pledging mutual amity by drinking to the health of one another. In course of time the formality lost much of its significance, and in the 17th, 18th, and 19th centuries the merely social custom became so tyrannical in the strictness of its etiquette, to say nothing of the extravagant absurdities attendant upon the proposal of a toast (*q.v.*), that by common consent the toast-

list, or number of healths formally drunk at banquets, has now been reduced to the narrowest limits.

Still, however, traces survive of long-ago days when the pledge of friendship symbolised by drinking to mutual health was not exchanged without mutual suspicion. Thus the glass bottom to a pewter mug provides the drinker with opportunity of watching for a stealthy blow; and when the loving-cup is passed round, one guest holds the cover in his dagger-hand while his neighbour drinks to him, or if the cup be lidless, the guest who drinks is guarded on either hand by his next neighbour, all three standing simultaneously.

Health, BOARD OF. Board established by the Public Health Act of 1848, its duties being to supervise the various measures for protecting the health of the people. In 1854 it was reorganized, but came to an end in 1858, when much of its work was transferred to the home office. In 1871 this passed to the new local government board, which remained the central authority for matters affecting the health of the people until it was abolished in 1919, being superseded by the ministry of health.

Health, BOARD OF. Public department in Scotland. It is the successor of the Scottish local government board, and was established in 1919 at the same time as the ministry of health in England and Wales. It also took over on July 1, 1919, the staff and the duties of the national health insurance commission for Scotland. The secretary for Scotland is the president of the board, and the offices are at 125, George Street, Edinburgh. The department of the ministry of health that looks after the affairs of Wales is also known as a board of health.

Health, MINISTRY OF. Department of the British civil service. The Act establishing it was passed early in 1919, and on July 1 of that year the ministry took over the duties formerly performed by the local government board, and the work of the national health insurance commission, with their staffs; also certain duties with regard to the health of the children from the board of education, and others formerly discharged by the privy council. Its authority is confined to England and Wales. Its head is a minister, with a salary of £5,000 a year. Other officials are a parliamentary secretary, a politician, and a permanent staff under a secretary. It employs a large staff of medical men. The offices are in Whitehall, London, S.W. See Local Government Board.

Health Visitor. Name given to persons whose duty it is to see that the laws about the public health and sanitary conditions are enforced. Some are voluntary, working under societies for the promotion of public health, of which there are a large number in England and Wales. For instance, in 1910 no less than 13 societies were represented at a conference. Paid health visitors are now employed by most of the large municipalities and work under the medical officer of health. Their duties, like those of the voluntary workers, are concerned with housing conditions, the care of infants and mothers, and other matters affecting public health. See Public Health.

Healy, TIMOTHY MICHAEL (b. 1855). Irish politician. The son of Maurice Healy of Bantry, he was



Timothy M. Healy,
Irish politician

Russell

called to the Irish bar in 1884. He had already entered the House of Commons in 1880 as Nationalist M.P. for Wexford, and he remained therein until his retirement from politics in 1918, sitting for co. Monaghan, 1883-85; S. Londonderry, 1885-86; N. Longford, 1887-92; N. Louth, 1892-1910; and N.E. Cork, 1910-18.

Healy's gifts as an orator, his wit and independence soon made him a prominent figure in Parliament and in the Irish party. He became an anti-Parnellite after the split of 1890, but in 1900 he supported reunion under John Redmond. He was expelled from the party in 1900, as he was opposed to the United Irish League, but he was readmitted in 1908, only, however, to be again turned out in 1910. In 1883 he served a term of imprisonment. He was made a Q.C. in 1899 and called to the English bar in 1903. He became first governor-general of the Irish Free State in Dec., 1922. His brother Maurice was a Nationalist M.P. from 1895 to 1900, and again from 1909-18, and a nephew, Thomas Joseph, from 1892-1900.

Heanor. Urban dist. and market town of Derbyshire, England. It is 3½ m. N.W. of Ilkeston and is served by the Mid. and G.N. Rlys. It stands on the Derbyshire coalfield, and the industries are coal-mining, iron-founding, and the making of hosiery. Heanor Hall is now a technical school. Market day, Sat. Pop. 15,300.

Hearing. Term used for the physiological sensation which is caused by vibrations which excite the auditory nerve. According to Helmholtz's theory there are in the ear certain vibrators which are tuned to varying frequencies of from 30 to 50,000 vibrations a second and which respond to these vibrations. Each vibrator can excite its attached nerve filaments, and when it does so an impulse, which the brain centres are capable of distinguishing or specifying, is transmitted to them.

There are other implied attributes of the vibrators. They must, *e.g.*, be easily set in motion, but quickly brought to rest. They may, by the amplitude of their own vibrations, signify to the brain the intensity of the vibrations impinging on them, and evoke the sensations corresponding to loudness. If a compound wave of sound falls on the vibrators, they can resolve it into its constituents, each vibrator picking out its sympathetic vibration, so that the brain may recognize that the vibrations are fused, yet may be sensible of the constituents of fusion. The theory compares the basilar membrane of the ear to the strings of a piano, and it has been found that there are between 16,000 and 20,000 cross fibres in the membrane, sufficient to provide the necessary combinations to give the sounds we hear.

There are many difficulties in the acceptance of this theory and a number of others, more or less plausible, have been put forward. The Rutherford-Waller or "telephone" theory treats the basilar membrane of the ear as a telephone membrane; while Ebbinghaus considered that one tone set in motion not only certain vibrators, but others harmonically tuned to them.

In order to produce movement in these physiological vibrators, the vibrations reaching them must be of sufficient strength. That the necessary strength is extremely small may be realized from the fact that it has been estimated that the ear is affected by atmospheric vibrations of a wave length comparable to that of the wave length of light, *i.e.* the energy required to influence the ear is of the same order of magnitude as that which produces impressions on the retina of the eye.

The human ear varies in its ability to detect sounds which are produced by a very high number of vibrations, a falling off taking place after middle age, but few ears can detect more than 30,000 vibrations a second. The lower

limit is about 30 a second; the higher usually 38,000 a second. Animals are capable of detecting vibrations that are unheard by human beings, and Francis Galton devised a dog whistle of so high a note of vibration that only his dog could hear it. The Harlequin fly responds to its mate by a vibratory apparatus equivalent to a sound receiver, but the sound is quite beyond human ears. It has been shown by Campbell and Dye that there are "sound waves" of 800,000 vibrations a second.

The sensations of hearing fall into two groups classified as noises and musical sounds. Noises are caused by impulses irregular in intensity or duration; musical notes by periodic and regular vibrations. In musical tones are three characteristics: intensity, pitch, and timbre or quality. Intensity depends on the amplitude of the vibration; pitch, on the number of vibrations in a given time. A high note has many vibrations; a low note few. Quality, which is the characteristic by which a tone is identified as proceeding from a particular instrument, or a particular human voice, depends on the fact that many waves of sound are compound waves, built up of other waves. The ear has the power of resolving and classifying these waves. Hearing is apparently very little affected by the use of one or both ears, though undoubtedly one ear corrects the faults of the other. G. T. Fechner has suggested that the ears perceive sounds at different pitches, so enabling a judgement to be formed as to the direction and, in many cases, distance from which sounds are coming.

Hearing is not universal among animals, there being no reason to suppose such a sense among the lowest vertebrates, for example. Spiders, earthworms, crustacea, etc., have been supposed to show responses to auditory stimuli. Insects have not been proved to show any sense of hearing, though fishes, which possess a structure analogous to the ear, respond to the vibrations of a tuning fork.

Though such animals as horses, dogs, and the higher vertebrates generally have a sense of hearing, its degree and range has not yet been fully ascertained. *See Ear; Sound.*

Hearing. In law, term used for the judicial procedure in any law case. Strictly speaking, the term is usually confined to equity cases, but in common usage it applies to the hearing of any lawsuit. The word is also used for a sitting of any body or commission appointed

to hear the evidence for and against any proposition. *See Procedure; Trial.*

Hearn, Lafcadio (1856-1904). Author. Born in Leucadia (Santa Maura), one of the Ionian Islands,



Lafcadio Hearn,
Writer on
Japan

he was the son of an Irish Army doctor by a Greek mother. He became a journalist in the U.S.A., but in 1891 went to Japan, where he was professor of English in the university of Tokyo, 1896-1903. He married a Japanese wife and became naturalised as a Japanese subject. Hearn wrote with singular acuteness and charm on the people, manners, customs, and spirit of his adopted country. His works include *Stray Leaves from Strange Literature*, 1884; *Glimpses of Unfamiliar Japan*, 1894; *Out of the East*, 1895; *Kokoro*, 1896; *Gleanings in Buddha Fields*, 1897; *Exotics and Retrospections*, 1898; *Ghostly Japan*, 1899; *Shadowings*, 1900; *A Japanese Miscellany*, 1901; *Kotto, or Japanese Curios*, 1902; *Japan: an Attempt at Interpretation*, 1904. He died Sept. 23, 1904. *See Life and Letters of Lafcadio Hearn*, E. Bisland, 1906.

Hearne, Thomas (1678-1735). English antiquary. Born at Littlefield Green, Berkshire, he was the son of the parish clerk of White Waltham. Compelled to go out to work as a boy, he found a patron who sent him to school at Bray and later to St. Edmund Hall, Oxford, where after graduating he was appointed an assistant in the Bodleian Library. In 1712 he became second keeper, but four years later was compelled to relinquish his position owing to his refusal to take the oath of allegiance to the Hanoverians. He died at Oxford, June 10, 1735, and was buried there.



Thomas Hearne,
English antiquary

His principal works are *Reliquiae Bodleianae*, 1703, and a *Collection of Curious Discourses on English Antiquities*, 1720. He edited *Leland's Itinerary*, 1710-12, and many other works. Extracts from his voluminous diaries were published as *The Remains of Thomas Hearne*, 3 vols., 1869, and the publication of the whole was begun by the Oxford Historical Society in 1885.

Hearse (Fr. *herse*, harrow). Wheeled vehicle for carrying the bodies of the dead to the place of burial. Hearses range from a simple box-shaped cart to elaborate glass-panelled, brass-railed, ornamented conveyances, topped with black plumes. Originally a hearse was a harrow-shaped framework for holding candles in church, especially

prominently in campaigns against the trusts, achieved notoriety as the exponent of an anti-British policy, and was censured in 1906 by Roosevelt and Root for his part in the campaign against McKinley.

He sat in Congress, 1903-7, for the 11th New York district, and unsuccessfully fought for the mayoralty of New York City in

annelid is little more than a specialised blood-vessel. In fishes the heart has one receiving chamber, or auricle, and one expelling chamber, or ventricle. The tadpole has a two-chambered heart, whilst the frog's heart has two auricles and one ventricle.

The human heart is a hollow, muscular organ of roughly conical



Hearse. Left, "open" vehicle with glass panels; right, type of motor hearse

at funeral services. It developed into a gorgeous, decorated canopy, holding candles, escutcheons, banners, epitaphs, verses, etc., especially for royalty and the nobility. The term is still used for a bier, coffin, or tomb, and in heraldry, for a charge resembling a harrow or portcullis. See *Burial Customs*.

Hearst, Sir William Howard (b. 1864). Canadian politician. Born in Ontario, Feb. 15, 1864, he studied for the law and practised in the Sault Ste. Marie bar in 1888, taking silk in 1908. In the latter year he entered the legislature of Ontario, and in 1911 was made minister of lands, forests, and mines. On the death of Sir J. P. Whitney in 1914 he became premier of Ontario, resigning in Nov., 1919. He was knighted in 1917.

Hearst, William Randolph (b. 1863). American newspaper proprietor. Born at San Francisco, son of Senator George Hearst, a Californian mining magnate, he, in 1886, secured from his father control of The San Francisco Examiner, and made it a remunerative property. In 1895 he bought The New York Morning Journal, ran it in opposition to The New York World, renamed it The New York American, and became owner of similar "yellow" journals in the leading cities of the U.S.A. in addition to weekly and monthly periodicals. He figured



W. R. Hearst, American newspaper proprietor

less highly developed blood-vessel or blood-vessels, and in the higher forms of life is divided into chambers with receiving and expelling functions. Among invertebrates and some of the lower vertebrates the heart is either absent or extremely simple. The lancelet has no heart, and the so-called heart of the

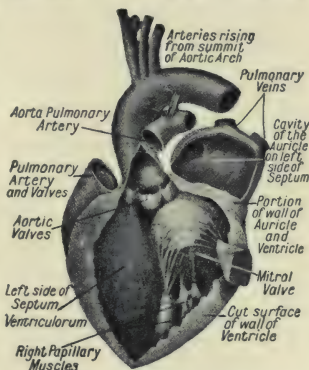
1905, and the governorship of New York State in 1906. In 1916 the British Government refused to allow the International News Service controlled by him to use the cables from Great Britain. In the same year the Canadian postmaster-general prohibited the entrance of the Hearst newspapers into Canada. The embargo was withdrawn in the spring of 1918.

Heart. In anatomy, the chief organ of the circulatory system of the blood. It consists of a more or

shape, enclosed in a membranous bag called the pericardium. It is placed obliquely in the chest, with the apex pointing towards the left, about two-thirds of the organ being to the left of the middle line. It lies behind the middle part of the sternum or breast-bone, between the lungs, and having behind it the roots of the lungs, the oesophagus or gullet, and the large blood-vessel known as the descending aorta.

The heart consists of two upper chambers or auricles, and two lower chambers or ventricles. The walls of the auricles are comparatively thin; those of the ventricles are thick and muscular. The right side of the heart is completely partitioned off from the left, but each auricle communicates with the ventricle of the same side. Into the right auricle open the two great veins, called the superior *vena cava* and the inferior *vena cava*, which return the blood from the body to the heart.

The right ventricle has two openings in it; the auriculo-ventricular opening, through which the blood from the right auricle passes into the ventricle, and which is guarded by the tricuspid valve consisting of three cusps; and the opening of the pulmonary artery, guarded by the semilunar valves. The left auricle receives the four pulmonary veins conveying the blood from the lungs, and opens into the left ventricle. The left ventricle has a particularly strong muscular wall, and receives blood from the left auricle through the auriculo-ventricular opening, which is guarded by the mitral valve, consisting of two flaps or cusps. From it springs the



Heart. Diagram showing left auricle and left ventricle, and other principal parts of the human heart

less highly developed blood-vessel or blood-vessels, and in the higher forms of life is divided into chambers with receiving and expelling functions. Among invertebrates and some of the lower vertebrates the heart is either absent or extremely simple. The lancelet has no heart, and the so-called heart of the

aorta or main blood-vessel, through which blood is distributed all over the body, the orifice being guarded by three semilunar valves.

The muscular substance of the heart is nourished by the two coronary arteries, which spring from the root of the aorta and pursue a course mainly between the chambers of the heart. The heart goes through a series of contractions and relaxations, producing the familiar heart beat, the contraction being known as systole, the relaxation as diastole. The contraction does not, however, affect the whole heart at once; it occurs first in the two auricles together and immediately afterwards in the two ventricles.

Rate of Heart Beat

After a short pause, the auricles again contract, and then the ventricles, the whole process thus forming a cycle of changes. In a healthy adult, the heart beats on the average 72 times in a minute. Apart from disease, the rate of the heart beat is increased by exercise and emotion and slowed by mental or bodily rest. Before birth, the average rate of the heart beat is 150 per minute, and during the first year of life from 115 to 130. The rate gradually decreases as age progresses, and in old age the pulsations are between 60 and 70.

When the heart is examined by means of the stethoscope, or the ear is placed to the front of the chest, two sounds are heard, followed by a short pause. The first sound, which is prolonged, is mainly due to the closing of the mitral and tricuspid valves. The second sound is shorter and sharper, and is mainly produced by the closing of the aorta and pulmonary valves. Variations in the sounds of the heart constitute a valuable means for diagnosing disorders and diseases of the heart. In a healthy person, the beat of the apex of the heart can be felt on the surface in the space between the 5th and 6th ribs and about one inch inside a vertical line drawn through the nipple.

DISEASES OF THE HEART. Defects in the heart may be present at birth, congenital, as they are called. The symptoms usually appear within the first weeks of life. Cyanosis or lividity of the skin, which may be most marked in the lips, nose, ears, fingers, and toes, is nearly always present. Difficulty in breathing and cough are frequent symptoms. If the defect is serious, the child generally dies within a few months. The following are the main forms of acquired disease of the heart:

Endocarditis, or inflammation of the lining membrane of the heart, usually affects the valves.

Acute simple endocarditis occurs as a complication of another disease, most frequently rheumatic fever, and sometimes tonsillitis and scarlet fever. In rare instances it is associated with measles or diphtheria, and it may also complicate pneumonia and phthisis. Malignant endocarditis is a severe form in which ulceration of the heart valves occurs. The disease is due to infection by a micro-organism. In mild cases the symptoms may not be very marked, but in what are known as the septic and typhoid types there may be severe prostration, delirium, and coma, with fatal termination. Sometimes the acute symptoms subside and the disease becomes chronic. The most important factor in the treatment is prolonged rest in bed.

Any valve of the heart may be affected by disease, but the mitral and aortic valves are those most frequently involved. The valve may not close properly (incompetency), with the result that the blood flows back into the chamber from which it has just passed; or the valve may be permanently narrowed (stenosis), so that the passage of blood from one chamber to another is impeded.

Forms of Incompetency

In aortic incompetency the aortic valves do not close properly, and some of the blood from the left ventricle, instead of passing on into the aorta, flows back into the ventricle. The most frequent cause is slow thickening of the edges of the valve, associated with a more or less general thickening of the walls of the arteries throughout the body. This condition is frequently due to alcoholism or syphilis, especially in those whose occupation involves prolonged muscular effort. Other causes are endocarditis and congenital defects. The early symptoms are headache, dizziness, and feelings of faintness on rising abruptly, palpitation, and pain in the chest. As the condition progresses, the patient suffers from shortness of breath, and there may be some dropsy of the feet. Sudden death may occur. In severe cases the heart becomes enlarged, and may weigh as much as 40 ounces.

Aortic stenosis is a narrowing of the aortic opening, resulting from thickening of the aortic valves and adhesion one to another. It is less frequent than aortic incompetency. Pain, dizziness, and fainting are the early symptoms. As the disease progresses, the mitral valve also becomes affected, and general dropsy may be present.

Mitral incompetency is most often due to endocarditis. It may, however, be associated with cal-

careous changes in the valve. The blood from the left ventricle tends to flow back into the auricle. This leads to dilatation of the auricle, which is followed by dilatation of the ventricle, and later the increased pressure produces dilatation of the pulmonary vessels, with changes in the lungs. Early symptoms are a bluish tint of the lips and face, and shortness of breath on exertion. In a later stage there is palpitation, difficulty in breathing, and the action of the heart becomes irregular. A cough occurs owing to the disturbance of the pulmonary circulation. Dropsy, beginning in the feet, later extends to the legs, and there may be accumulation of fluid within the abdomen. Death occurs from general dropsy or from heart failure following repeated attacks. Sudden death is infrequent.

Mitral stenosis is usually the result of endocarditis. The passage of blood from the auricle to the ventricle is impeded, and this leads to thickening of the wall of the auricle. The condition is always associated with some degree of incompetency of the valves as well. A person may be unaware of the existence of the disease for years, but when the compensatory changes in the heart break down the patient suffers from shortness of breath, cough, and irregular action of the heart. Affections of the tricuspid valve are generally secondary to changes in the other valves of the heart. Affections of the pulmonary valves are rare. Not infrequently two or more valves are affected simultaneously, and incompetency and stenosis may occur together.

Adjustment and Compensation

The heart possesses very considerable power of adjusting itself to affections of the valves. In both stenosis and incompetency, the muscular wall of the heart thickens, and the force of contraction is increased so as to ensure that the same amount of blood is driven into circulation. This condition is known as compensation, and so long as compensation is effective no treatment is required.

When compensation fails, and symptoms such as shortness of breath or fainting occur, treatment must be given. Rest in bed is of great importance, as it relieves the heart of an appreciable amount of its work, and enables the muscle slowly to develop sufficient power to overcome the defect. The heart may also be relieved when the circulation becomes embarrassed by diminishing the amount of fluid in the body, which may be done by the administration

of saline purges, a useful method when dropsy is present.

In severe cases, when the veins are engorged, bleeding may be resorted to. For stimulating the action of the heart, digitalis is a particularly valuable drug. Iron and strychnine are often of great service. When dropsy is excessive, the fluid may be drawn off by puncturing the legs, or tapping the abdomen. Pain, gastric symptoms, cough, and sleeplessness may require special treatment, but will all be relieved by measures directed towards the condition of the heart.

Besides changes in the valves, the muscular wall of the heart may suffer from disease. Acute dilatation of the heart may be the result of severe muscular effort, or may occur in the course of other diseases. Dilatation or thickening of the walls of the heart (hypertrophy) also occurs with valvular disease of the heart. Fatty degeneration of the heart is a condition frequently met with following wasting diseases and prolonged fever, and in old age.

Other forms of degeneration may follow disease or blocking of the coronary arteries, i.e. the arteries which supply the heart muscle with blood. The symptoms of disease of the heart muscle are shortness of breath on exertion, weak, irregular pulse, faintness, and pain in the chest. Sometimes there may be no serious symptoms for years, and then sudden death may result from syncope. A person suffering from myocardial disease should lead a careful, healthy life.

Functional Affections

Angina pectoris is a term applied to sudden attacks of agonising pain in the heart. The attack may be brought on by exertion, emotion, flatulent distension of the stomach, exposure to cold, and other causes. Thickening of the coronary arteries is almost always present. Persons suffering from this affection should live a quiet life, avoiding muscular effort and mental distress. Attacks are relieved by inhaling nitrite of amyl.

Functional affections of the heart form an important class of disorder. These are conditions in which no organic changes can be detected in the heart or, at all events, no changes sufficient to account for the symptoms. Nevertheless, the patient suffers from pain over the heart, shortness of breath, dizziness and feelings of faintness. Palpitation is frequent, and the pulse rate may be raised to 140 or more. Slowing of the pulse is very much less frequent. This condition is due to disturbance of the nervous system, i.e. is

a neurosis, and is usually the result of severe mental or physical shock.

A large number of cases have been seen in soldiers, sometimes following the effects of being in or near an explosion, and sometimes being simply the result of breakdown under prolonged strain. Many persons suffering from this condition are convinced that they have serious disorder of the heart, and live in a state of constant apprehension, which itself tends to keep up the disturbed action. The essential factor in the treatment is to cure the general nervous disturbance, and to satisfy the patient that he has no serious disease of his heart. *See Anatomy; Electricity; Man.*

Heart-burial. Burial of the heart apart from the body. This practice dates from remote times, and in Europe was apparently most common in the 12th and 13th centuries. It was possibly due to the notion that the heart was the seat of the noble qualities, a motive perhaps reinforced later by a pious desire to secure the prayers of more than one community for the soul. Many of the Crusaders had their hearts buried in Jerusalem.

Among kings of England whose hearts have been buried apart from their bodies are Richard I, whose heart was buried at Rouen; Henry I and Henry III, both in France; Edward I, at Jerusalem; and James II, at Chaillot, near Paris. The heart of Eleanor, queen of Edward I, was buried at Lincoln.

The heart of Robert Bruce, after many adventures, was eventually buried at Melrose Abbey instead of at Jerusalem, as he had wished: the heart of Paul Whitehead, secretary of the Medmenham "Hell-Fire" Club, was buried with much pomp in the Le Despenser mausoleum at West Wycombe, Bucks, in 1775; and that of Daniel O'Connell at Rome. The practice was prohibited by Pope Boniface VIII, but again permitted by Benedict XI. *See Burial Customs.*

Hearth. Word generally used to signify the part of the floor of a room on which the fire is laid. Usually in the chimney, it is built of brick, stone, or metal. It has come to mean the house itself, in such expressions as "hearth and home."

In metallurgy the term is applied to the most elementary forms of furnace used for the extraction of metals, and to the beds of more elaborate structures, i.e. those parts on which rests the ore or metal under treatment. The floor of a smith's forge is also called a hearth, while the term is occasionally used for a ship's galley. *See Furnace.*

Hearth Tax. Tax of 2s. on every hearth introduced in England in 1662. There were certain exemptions, the very poor cottages, for instance, but the impost was very oppressive and was abolished in 1689, although then producing £170,000 a year. Its unpopularity was due partly to the fact that it was farmed out, and the people resented the visits of the chimney-men, as they were called. A somewhat similar fumage, or smoke tax, appears to have been levied in England in Anglo-Saxon times.

Heart of Midlothian. THE Scott's seventh novel, the second of the Tales of My Landlord series, and adjudged by good critics the best of the Waverleys. It is a story of infinite pathos, with a heroine in humble life (Jeanie Deans), whose sweet naturalness and devotion to her erring half-sister Effie have moved the hearts of novel-readers all over the world since the book was first published, in June, 1818.

Its principal features are Effie Deans's romance, her trial for false murder, the true-blue Presbyterianism of her father, "Douce Davie," the self-sacrifice of the deputy-schoolmaster, Reuben Butler, and his courtship of Jeanie; the quaint characters of the two lairds of Dumbiedikes; the fateful figure of the ne'er-do-well, Staunton; the tragedy of Meg Murdockson and her daughter, Madge Wildfire; and the picture of the Porteous Riot (1736), with which the story opens. The title is taken from the old Edinburgh Tolbooth (prison). Daniel Terry dramatised the novel in 1819. *See Deans, Effie*



Heart of Midlothian. The old Tolbooth, Edinburgh; the site is now marked by a stone heart in the causeway

Hearts. Card game somewhat resembling whist (*q.v.*), except that there are no partners. In effect, it is a combination of ordinary whist and the *misère* call at solo. The object of the game is to get rid of every card of the heart suit that a player may hold. Thus, tricks may be taken if the round contains no hearts, but should hearts be contained in it, the player endeavours to force the trick upon one of his adversaries. When a heart can be discarded this should be done. The player having the fewest or no hearts receives from the others according to the number of hearts they may hold.

Heart's Content. Port of Newfoundland. It stands on the E. side of Trinity Bay, and has a good harbour, used by fishermen and others. Here is the terminus of the cables from Valentia, Ireland. Pop. 1,000.



Heartsease,
flower and
foliage

small flowers are whitish, yellow and

purple, the tints sometimes combined in one flower, sometimes distinct. Among other popular names for the flower were Love-in-idleness, Three-faces-under-one-hood, Pawnee or Pansy (*Fr. pensée*). The latter name has been adopted generally for the wonderful garden forms that have been evolved by selection from the little wild-flower. See Pansy.

Heartseed (*Cardiospermum halicacabum*). Climbing herb of the natural order Sapindaceae. A



Heartseed. Spray of foliage with
flowers and seed pods

native of the tropics, its leaves are divided into coarsely toothed, lance-shaped leaflets. The small greenish-white flowers form short sprays. The seed vessel is a bladder-like capsule, and the round seeds bear a heart-shaped scar, whence the name. An alternative name is balloon vine.

del Cimento" at Florence, measurement of temperature attained a very fair standard of accuracy. These Florentine academicians adopted the glass bulb and stem, containing either mercury or spirits of wine, choosing as "fixed points" the temperature of snow in the severest frost and the temperature of the bodies of cows and deer, and divided the stem between into 40 or 80 equal parts.

G. H. Fahrenheit (1686-1736) perfected the mercury in the glass thermometer by discovering a simple process for cleaning mercury, and by observing that the temperature of a boiling liquid depends on the pressure impressed on its surface by the atmosphere or artificial means. Having taken his zero to be marked when the bulb was in a mixture of ice, sal-ammoniac and water, and another fixed point to be indicated when the bulb was under the armpit of a healthy person, he divided this interval into 24 equal divisions; finding these to be too large, he subdivided them into four equal parts.

F. and C. Thermometers

On this scale he found that pure melting ice gave constantly 32, and he no doubt used this as a check on his graduation, and he found that boiling water was generally between 211 and 213, varying with the height of the barometer. Ultimately melting ice was taken as one fixed point and marked 32, and steam rising from water boiling under a pressure of one "standard atmosphere" (760 mms. or 29.92 ins. barometric height) was taken as another and marked 212. In 1742 Celsius of Upsala suggested the centesimal division, and marked the "boiling-point" 0 and the "freezing-point" 100. Eight years later Strömer, also of Upsala, suggested the inversion of the numbers, and gave us the present form of the "centigrade" thermometer.

As different liquids did not expand proportionately one with the other on receiving similar alterations in hotness, some difficulty was experienced in deciding on the points which were to be marked 1, 2, 3, etc., since mercury indicated a slightly different series to other suitable liquids such as alcohol, pentane, etc. Through the researches of Boyle and Amontons in the 17th century, of Gay-Lussac, Dalton, and Charles in the 18th and 19th, and of Regnault in the 19th century, the expansibility of gases had been very carefully observed, and the notable fact of the very approximate equality of their expansibilities had been clearly enunciated, especially for

HEAT: THEORY AND MEASUREMENT

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Here are described the various theories of heat and its measurement, serving as a general introduction to the many articles in this Encyclopedia dealing with heat in its various manifestations, and the investigators in the subject. Such articles are Conduction; Freezing point; Fusion; Melting point; Thermo-dynamics; Thermometer; Dewar; Joule; Regnault

The common sensations experienced by everyone who touches the surface of a body leads to a rough classification of bodies as "hot" or "cold." Also the sensations experienced when in full view of the sun or a fire, or even when sufficiently close to a hot but non-luminous body, and the observations of the tendency of bodies which originally were unequally hot to come to the same state of hotness or coldness, impress on our minds the idea of the transference of something which we call "heat" from body to body. A little trouble is required to avoid confusing our sensations of hotness and the concept of "temperature" based on them, with the concept of heat. After all, temperature is the name which we give to any conveni-

ent measure which we make of a body's condition as regards hotness, while it is clear that the amounts of heat involved in changing a body's condition from one temperature to another will not be determined solely by those temperatures, but will depend also on the mass of the body and the nature of its material.

Historically the study of the science of heat began with investigations concerning the measurement of temperature. The sense of touch is neither sufficiently sensitive nor precise to serve as a reliable guide in such matters. The invention of the first thermometers has been ascribed to various people, but certainly Galileo's claim is one of the best established, and in the hands of his pupils who formed the famous "Accademia

those gases like hydrogen, oxygen, nitrogen which are more "permanent," i.e. more difficult to liquefy.

By degrees the use of the hydrogen or nitrogen thermometer as a standard of comparison for all liquid-in-glass thermometers became the accepted practice in careful research, and the final touch was added by Lord Kelvin (then William Thomson) in 1848, when he established on purely theoretical grounds an "absolute thermodynamic" scale of temperature which is independent of the particular properties of any particular substance, and in collaboration with Joule of Manchester carried out a famous series of experiments to determine the slight deviations between the indications of a "gas" thermometer and the "absolute scale."

The Platinum Thermometer

This settling of the scale of measurement is quite apart from the great practical development which has taken place in recent years in the construction of thermometers for special purposes, such as measurement of very low or very high temperatures. Mainly owing to the labours of H. L. Callendar the "platinum" thermometer has become an instrument of great precision for such extremes as liquid gases and furnaces. In this type alteration of temperature is measured by the variation experienced in the electric resistance of a wire of pure platinum mounted and insulated on a mica frame, protected in a tube of porcelain, and connected by suitable leads to apparatus for accurate determination of resistance. By inserting large porcelain test-tubes in furnaces with their open ends just protruding through the wall of the furnace, and measuring the amount of radiation proceeding from this opening, great precision has been introduced into furnace thermometry. In these "radiation pyrometers" use is made of Stefan's law that the amount of radiation emitted from such a "full radiator" as this tube varies according to the fourth power of the temperature as shown on the absolute scale.

We must be careful to free our minds from any confusion between the famous discussions as to the nature of heat, and the experimental work carried out for the purpose of measuring heat. Even at a time when views were entertained concerning the nature of heat, which we now regard as quite inadequate, the question of its measurement had advanced a considerable distance along right

lines. The early attempts to utilise the mechanical power of steam in Britain were made in the eighteenth century, and James Watt received great assistance from Joseph Black, of Edinburgh, who was the first to elucidate the ideas of "specific heat" and "latent heat."

Specific Heats

In modern units we say that 1 "gram-calorie" of heat is required to raise the temperature of 1 gram of water through 1 centigrade degree, and for other masses and ranges of temperature the amount of heat is in proportion to the product of the two numbers involved. What Black discovered was that other materials had their specific amount of heat for similar changes, different for each substance. Thus, copper requires about 1/11 of a calorie per gram per degree, iron about 1/9, mercury 1/30, ice 1/2, turpentine 1/2, etc. Such numbers are referred to as "specific heats" of copper, iron, etc., and a notable fact is the very large "capacity for heat" enjoyed by water in comparison with nearly all other substances, especially the materials of the earth's crust.

Black also discovered what is, in deference to historic tradition, still called "latent heat"; i.e. the fact that when a body changes state from solid to liquid or from liquid to vapour, a considerable quantity of heat is required to effect this change of state even without any change of temperature. Thus, the latent heat of fusion (melting) of ice at 0° C. is 80 calories per gram melted; of tin at 231° C., 14 calories; of silver at 1,000° C., 21; of mercury at -39.5° C., 3, etc.; the latent heat of vapourisation of water at 100° C. is 537 calories per gram vapourised; of ethyl alcohol at 78° C., 210 calories; of turpentine at 156° C., 69 calories, etc.

Joseph Black's Latent Heats

Similarly definite quantities of heat are involved in chemical changes as distinct from physical, and we speak of "heat of combustion," "heat of reaction," "heat of solution." In fact, in Black's mind there was little difference in nature between such heats and his "latent heats." He shared the view, common in his time, that heat was actually a subtle and highly elastic fluid material with different degrees of affinity for ordinary matter and also endowed with the property of self-repulsion (an idea common then and now as regards "positive electricity" or "negative electricity"). Black assumed that the apparent disappearance of the heat (since it produced no "sensible" change

in the temperature) was due to a quasi-chemical combination between the "caloric" (as the hypothetical heat fluid was called) and the particles of the melting or vaporising substance, so that water was "ice cum caloric" and steam was "water cum caloric"—i.e. the caloric was latent in the water and in the steam.

It is generally believed that the modern view as to the nature of heat arose first in the early 19th century. The truth is the belief that heat is a mode of motion is to be found in the works of Descartes, Amontons, Boyle, Francis Bacon, Hooke, and Newton. The theory at that time rested on very slender evidence, so perhaps it is not surprising that the 18th century philosophers abandoned it in favour of the material hypothesis; and, indeed, so long as we exclude from consideration the production of heat by friction and percussion, the caloric theory serves as a very adequate theory for thermal phenomena. But the literature of the 18th century teems with controversy on the subject, and the often ingenious attempts of the "calorists" to evade the difficulties of frictional heat. The decisive blows at the caloric theory were struck by Benjamin Thompson and Humphry Davy.

Davy's Ice Experiment

In 1798 Rumford pointed out that in boring cannon out of solid metal the action of the borer poured out heat unlimitedly. "It is hardly necessary to add," he wrote, "that anything which any insulated body can continue to furnish without limitation, cannot possibly be a material substance." Sir Humphry Davy melted ice by rubbing two pieces together by a mechanism in a vacuum. This controverted directly the view that caloric was squeezed out of the pores of a body or torn from combination with its particles by rubbing (this was the calorist's explanation of frictional heat); for, as everyone admitted, heat had to be communicated to ice and not "torn from" it, to melt it.

The famous experiments of J. P. Joule settled the matter finally. Evolving heat by friction of paddles in water, he measured the heat yielded and compared it in every case with the work required to maintain the paddles in motion, discovering that 1 pound-calorie (heat required to raise 1 pound of water through 1 centigrade degree) was produced by the expenditure of approximately 1,400 foot-pounds of work. These experiments repeated by several other workers under varying conditions form the

experimental basis of the modern branch of physics known as thermo-dynamics. Its main development on the theoretical side is contained in the researches of four great physicists: Carnot of France, Clausius and Helmholtz of Germany, and Lord Kelvin. Its great feature is the width of view and the fundamental nature of its conclusions, which can be arrived at without any appeal to a theory of heat at all.

Nevertheless, as the human mind must speculate on ultimate nature, there is no doubt that its conclusions are much easier to relate to the dynamical theory of heat than to the material. In thermal phenomena we believe we are witnessing the variations which go on in the degree and intensity of the motions of the molecules of a body. Increased agitation produces the sensations of heat, involves a sundering apart which we see in expansion, may even result in a complete rupture between molecules against cohesion, as when fusion or vaporisation takes place. What is transferred from body to body is not a material, but an amount of energy of motion, and so the science of heat in its widest development becomes merged in the study of transformations of Energy.

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Heath (*Erica*). Popular name for a genus of wiry evergreen shrubs of the natural order Ericaceae (*q.v.*). They are natives of Europe, Africa, and N. Asia. The slender, rigid leaves are much like small pine-needles, and are disposed mostly in whorls. The four petals are always united to form an egg-shaped, bell-shaped, or tubular corolla.

Four species are natives of Britain, including purple heath (*E. cinerea*), that colours the heaths and moorlands in summer; the cross-leaved heath (*E. tetralix*), with delicately rosy-tinted flowers, in moist hollows; the crimson-flowered fringed heath (*E. ciliaris*) of S.W. England; and the Cornish heath (*E. vagans*) of the Lizard and Land's End. A fifth species, the Irish heath (*E. mediterranea*), occurs in W. Ireland. Many of the

exotic forms, particularly those of S. Africa, are grown in English greenhouses; but the first species to be introduced was the S. European briar-root (*E. arborea*) in 1856.

Some of the most popular forms are hybrids of garden origin. In the open air they flourish in sand or peat in any position where rhododendrons would thrive. They should be planted in autumn or early spring. Greenhouse species are usually grown as specimens in pots, in soil composed of two-thirds peat and one third silver sand. They are chiefly used for decorative purposes in early spring, and, after flowering, are stood out in the open air in a warm and sunny position before being taken into the greenhouse again in autumn. They are propagated by cuttings in spring and division of the plants in autumn, or may be increased by layering (*q.v.*).

Heath. Literally, a place grown over with shrubs, and derived from the plant of this name. Heaths are found in various parts of Great Britain, notably in Surrey, *e.g.* Walton Heath and Burgh Heath.

Heath, NICHOLAS (c. 1501-78). English prelate. Born in London, he was educated at both Oxford and Cambridge. He was ordained and, adhering to the older faith, was made bishop of Rochester in 1539; in 1543 he was translated to Worcester. Heath's opposition to the reformed teaching led to the loss of his bishopric in 1551, but soon after Mary came to the throne he was made archbishop of York and lord chancellor. Finding Elizabeth determined on a moderate course, he refused to crown her. He was, therefore, deprived of his archbishopric and lived in retirement for the rest of his days.

Heathcoat, JOHN (1783-1861). British inventor. Born at Duffield, Derbyshire, Aug. 7, 1783, he was apprenticed to a smith, afterwards taking over a machinery business in Nottingham. He started in business as a lace and net manufacturer in Loughborough, and in 1808 produced his great invention, a machine for making imitation pillow lace. Other inventions included a steam plough and a process for purifying salt. In 1816 Heathcoat's factory at Loughborough was destroyed by the Ludites (*q.v.*); consequently he moved to Tiverton, where he set up as a lace manufacturer. From 1832-59 he was M.P. for Tiverton, and there he died, Jan. 18, 1861. The business at Tiverton still flourishes.

Heather (*Calluna vulgaris*). Gregrarious shrub of the natural order Ericaceae. It is a native of Europe, W. Siberia, Azores, and N. America. The leaves are three-

sided and minute, overlapping in four rows; the flowers honeyed and rosy-purple, the four stiff sepals being much larger than the bell-shaped corolla. The plant covers vast extents of heath and moorland. The wiry stems and branches are useful for thatching, making brooms, and for fuel. See Ericaceae.

Heathfield. Village of Sussex, England. It is 15 m. from Tunbridge Wells with a station on the L.B. & S.C. Rly. It stands on the Cuckmere, and had once a foundry where cannon were made. The church of All Saints is mainly a 15th century building which has been restored. Lord Heathfield, the defender of Gibraltar, took his title from here; he lived at Heathfield House, the old seat of the Dacres, and is buried in the church. From Gibraltar Tower, erected to his memory, there is a fine view.

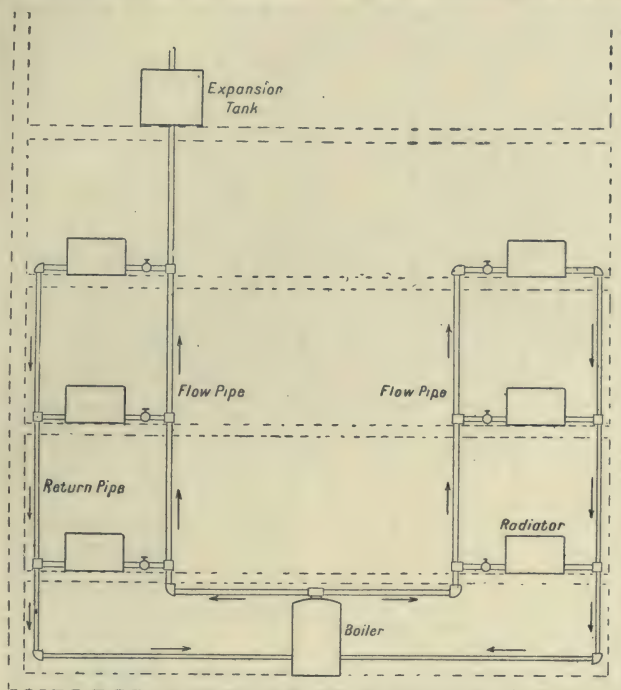
Heathfield, GEORGE AUGUSTUS ELIOTT, 1ST BARON (1717-90). British soldier. Born at Stobs, Roxburghshire, Dec. 25, 1717, he was educated at Leiden university and served with the Prussian army, 1735-36. On his return to England he was trained at Woolwich and was commissioned as field engineer. In 1739 he joined the 2nd Life Guards, served with his regiment in the war of the Austrian succession and was wounded at Dettingen and Fontenoy.

Colonel of the 1st Light Horse in 1759, he distinguished himself in the Seven Years' War under Prince Ferdinand in the campaign of 1759-61. Promoted major-general in 1759, he was second in command in the Cuba expedition of 1763, and became lieutenant-general in 1765. In 1774 he was appointed commander-in-chief in Ireland, but the following year was sent to command Gibraltar. In 1779 the Spanish opened the siege of the fortress, which Heathfield held stubbornly for four years, when he was relieved by Lord Howe. On his return to England he was knighted and in 1787 raised to the peerage as Lord Heathfield, baron of Gibraltar. He died at Aix-la-Chapelle, July 6, 1790.

Heating. In climates subject to low temperatures, it is necessary for health and comfort to produce artificial warmth. Remains of Roman villas in Britain reveal the method of warming by hypocausts—flues running under the floor and



1st Baron Heathfield,
British soldier
After Reynolds



Heating. Plan showing system of steam heating

up the walls of an apartment, and heated from a fireplace outside or underneath the building.

The open coal-fire is an inefficient means of heating, since much of the heat escapes up the chimney; while the closed coal stove, standing in the room and connected with the chimney by a pipe, is probably the cheapest and most economical. Oil, gas, and electric stoves are very efficient, but comparatively costly to run. On the score of efficiency, convenience, and cleanliness combined, the many systems of central heating are superior to any form of isolated heating, and one or other of them is almost invariably adopted for factories and other large buildings, even in countries where open fires and stoves are commonly used in dwelling-houses. In central heating the source of heat is a furnace or boiler in the basement.

DIRECT HEATING BY WATER. Under the low-pressure system water heated in a boiler circulates through pipes and radiators in various parts of the building. The circuit usually consists of a flow main from the top of the boiler, and a return main entering the boiler near the bottom. Each radiator is connected with the two mains by branch pipes provided with regulating valves. Circulation is

natural—the hotter water rising and the cooler sinking—unless the distances are great, when forced circulation by pump may be necessary. The pressure on the pipes at any elevation is merely that of the head of water. The radiators are fitted with air-escape cocks at their highest points; and the system of pipes is kept full by an open tank which also permits free expansion of the water while being heated.

In the high-pressure system steel pipes of small diameter are used for the boiler and the circulating mains, and the radiators are of very strong construction. The arrangement is the same as that described above, except that a closed expansion chamber takes the place of the open tank at the highest point. Pressures up to 300–500 lb. per sq. inch are used; the pipe and radiator surfaces have a heat corresponding to the pressure.

DIRECT STEAM HEATING. Here again there is a low-pressure and a high-pressure system. The first takes steam from a boiler or the exhaust of an engine at or below atmospheric pressure, and maintains a partial vacuum in the pipes and radiators by means of an air pump. The condensed water is returned to the boiler. This system is very economical, especially for buildings wherein steam

power is used for other purposes. The high-pressure method employs steam at pressures up to 15 lb. above atmosphere, and the condensed water drains back through the supply main, or through a separate return to the boiler.

Direct heating by hot air is combined with ventilation. Fresh air, passing through a heater surrounding the furnace, is warmed and rises by convection through pipes to registers in different parts of the building, where its heat can be tempered at will by mixing in cold air admitted direct to the flue from outside. For buildings requiring great volumes of air, a large steam-heated radiator is sometimes substituted for a furnace, and the air is driven through it and the flues by a centrifugal or disk fan.

Indirect heating by air is a variation of the foregoing. Several radiators, all steam- or water-heated by a central boiler, are distributed over the basement in chambers at the foot of flues running to the rooms above. Each radiator heats the air for one flue.

ELECTRIC HEATING. Electric heating may be considered from two points of view, domestic and industrial; from either electricity has many advantages over any other form of artificial heating: it is easy to transmit and can be developed precisely where it is required; it is under perfect control, the amount of heat given off into the atmosphere admits of simple regulation; while any temperature may be attained, from a gentle warmth to a temperature sufficient to melt the hardest steel.

Principles of Electric Heating

Its cost still makes it prohibitive for such major operations of industry, but it is used for special smelting processes, and new applications in these directions are being constantly made. For the heating of household rooms, offices, and some other buildings, and for a number of the minor processes of industry, electricity is steadily displacing coal and gas, its great convenience and cleanliness largely compensating for its greater cost.

The principle on which all forms of electric heaters depend is that of electric resistance. In all cases the heat is developed by trying to force a current of electricity through some medium which resists the passage of the current, and has its temperature raised in consequence. The heat is almost universally applied by radiation from the hot element supplemented by convection set up by contact of the air with the electrically heated surface. The resisting medium may be a filament, pencil or slab of carbon, a

wire of some metal having a high melting point and not liable to corrode, a piece of earthenware, or a slab of some specially prepared material such as compressed mica.

The simplest form of electric heater is the common incandescent or glow lamp, which not only gives light but throws out also a very appreciable amount of heat. From the lamp maker's point of view this is a disadvantage, and his aim is to reduce the heat, which he regards as a loss given out by the lamp. Nevertheless very convenient electric heaters are now used which are simply enlarged glow lamps.

This type of heater is, however, being displaced by more substantial apparatus. A diagrammatic section is here shown which illustrates the manner in which the principle of electric resistance is applied. In this view, A is the frame of the heater, and is made of stout metal bars with a perforated cross member at B which permits currents of air to pass upwards when the heater is in use. C is one of two switches by which the current is put on or cut off; two switches are provided so that the heater can be either half or wholly in operation. D is one of a series of coils of fine metal wire laid upon an earthenware base E. F is a guard of open wire mesh to shield a passing garment from contact with the heater when "alive."

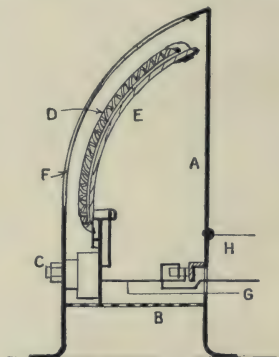
Current enters the apparatus at G and passes away at H. The passage of the current almost instantly raises the temperature of the long coil to incandescence. Heat is radiated from the coil in the first instance, but the coil lying on the earthenware base heats the latter, which becomes a glowing mass and in turn radiates heat into the room, at the same time building up a store of heat which continues to give out warmth for some while after the current has been cut off.

Application to Domestic Uses

In another similar form of heater the wire coils are dispensed with, the heating elements being strips of high resistance metal embedded in special earthenware. Every form of domestic heating and cooking utensil is now constructed for the use of electricity as the heating agent. In grills, toasters, hot-plates, ovens, etc., the heating element is usually an open wire coil which attains a bright red heat, at which temperature it is not affected by the atmosphere. In small kettles, saucepans, frying-pans, and flat irons, an element in the form of a small slab made of compressed mica with a high-resistance wire or strip embedded in it is largely used.

A useful heating element is

known as an immersion heater, and is in the form of a rod of compressed mica or earthenware with a high

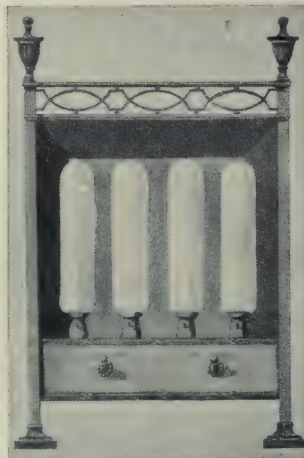


Heating. Electric heater shown in section. For explanation see text

resistance wire or strip inside. The heater can be inserted in any pan or other vessel containing water, which it will rapidly heat, or boil if the quantity be not too great.

An interesting application of electric heating is represented by the electrically heated garments worn by air pilots on long or high flights or in cold weather. Small heating elements are sewn into the garment at various points, and even into the backs of gloves. The current is provided by the engine of the aeroplane. See Cookery.

Heaton. Parish of Northumberland, England. It is within the co. bor. of Newcastle-upon-Tyne, with a station on the N.E.R. Many of the inhabitants are engaged in the neighbouring coal mines. Pop. 21,912. See Newcastle-upon-Tyne.



Heating. Electric lamp type of heater in common use

Heaton. Common topographic term in the Manchester dist., S.E. Lancs, England. Heaton Norris, Heaton Mersey, Heaton Chapel, Heaton Moor all lie S.E. of Manchester near the Mersey, and are interested in the cotton industry. Heaton Norris (pop. 11,240), the largest of these places, is a town and parish separated from Stockport only by the Mersey, here crossed by the L. & N.W. Rly. viaduct and other bridges. Heaton Park, area 1 sq. m., due N. of Manchester, in Prestwich parish, formerly the seat of the earls of Wilton, was bought by the Manchester Corporation in 1902, and the fine stone mansion now houses collections of pictures and Oriental arms and armour.

Heaton, SIR JOHN HENNIKER (1848-1914). British postal reformer. Born at Rochester, and educated at King's College, London, he was Conservative M.P. for Canterbury, 1885-1910, and was created a baronet in 1912. He had large interests in Australia and, though never holding an official position in the Government, he accomplished, as a private member, universal penny postage for letters within the British Empire, 1898, penny postage between the U.S.A. and the United Kingdom, 1908, money orders by telegraph in Great Britain, and a parcel post to France. He died Sept. 8, 1914.



Sir J. Henniker Heaton, postal reformer
Elliott & Fry

Heaven. Belief in a future life is found in most primitive religions. It assumes various forms, some of which are inconsistent with the idea of a happy state after death, or of one which is appreciably better than the present. Many primitive conceptions of the future life represent it as essentially inferior to the present. Among such beliefs may be noted specially the conviction that the spirits of the dead linger round the scenes of their earthly existence, and the conception of transmigration according to which the soul of the departed enters into another human or animal body.

At this early stage of religious development the prevailing notion is that the life beyond the grave bears a close resemblance to the present life, and that the departed continue their vocations in similar though perhaps improved conditions. The entrance to the world of the blessed depends upon the favour of the gods, which is earned

by a due fulfilment of the religious rites and customs of the tribe. A striking illustration of the belief that the future life is a continuation of the present is the common custom of burying implements and weapons with the corpse.

Among the national religions the Egyptian laid great stress upon the life beyond the grave. An ethical development may be observed in the conditions required for admission to the abode of the blessed. Moral purity is regarded as essential in the higher forms of Egyptian religion. The Greek and Roman religion did not develop the idea of a happy life beyond the grave to anything like the same extent. The thought is not, however, entirely absent, and it played a considerable part in the so-called "mystery religions." The prevailing view is nevertheless that the life beyond the grave is merely a feeble and shadowy copy of the present world. Only certain heroes specially favoured by the gods are supposed to enjoy happiness in an earthly Elysium. Philosophical ideas of immortality were developed by Pythagoras, Plato, Aristotle, and other thinkers.

Eastern Conceptions

The religions of the East have made the idea more prominent, and both Hinduism and Buddhism have evolved complex doctrines of the hereafter. According to the Buddhist theology the state of final blessedness consists in Nirvana, which involves the loss of individual existence. Thus the complete attainment of salvation would raise the soul above heaven. Pious people who have not yet attained this final blessedness are rewarded by re-birth in one of the numerous heavens. The highest heaven is a condition in which desire and pleasure have no place.

Mahomedanism offers a very different conception of heaven. The Koran teaches the resurrection of the body and represents the beatitude of the faithful as consisting of enjoyments of a sensual character. The crudity of this view has, however, been modified by the more mystical schools of Mahomedan thought.

In the O.T. the word heaven is used to signify the sky, which is regarded as the roof of the world and also as the dwelling-place of God. The idea of a reward for the righteous after death is not prominent in Hebrew religion, and is only found in the later books. The prevailing belief was that the divine Providence metes out rewards and punishments in this life. Some of the most interesting passages in Hebrew literature are pro-

tests against this view, cf. the book of Job. In later Jewish literature, and particularly in the so-called Apocalyptic writings, the idea of a resurrection and a future life becomes very prominent, though it assumes somewhat fantastic forms.

The New Testament and Heaven

In the N.T. heaven is, as in the O.T., the dwelling-place of God, as we are reminded by the opening words of the Lord's Prayer. It is also represented by the writers of the Epistles and the Revelation as the abode of the ascended Christ. Heaven is also the final home of the righteous. This is a part of the teaching of Jesus and of the apostolic writers. Several passages suggest that there is more than one heaven. It is possible that this is implied in Christ's saying about "many mansions." S. Paul speaks of being caught up into the third heaven (2 Cor. xii, 2). In the Epistle to the Hebrews Christ is said to have "passed through the heavens" (Heb. iv, 14).

No definite statements are to be found in the N.T. on the nature of heaven and the life of the righteous in the world to come beyond the assertion of general principles. The language of the Revelation of S. John must not be interpreted as a literal description of heaven. The Christian conception of heaven is social. It is described as a kingdom and involves intercourse. It is, however, not a decrease of life, but an increase, since the state of the blessed is called "eternal life."

The joy of heaven, in the Christian view, is spiritual and not material. Jesus was careful to point out that the relations which are based on bodily functions are not carried over as such into the heavenly kingdom. It consists in the unimpeded exercise of moral and spiritual activities. Thus the desire for truth and understanding cannot, in the nature of things, be fully satisfied in the present order, and the life of heaven is conceived as one of fuller knowledge as contrasted with knowledge "in part." Another element in the joy of heaven is the fuller development of fellowship with others and of the possibilities of love. For Christianity, however, the supreme good and the final reward is perfect communion with God, or the Beatific Vision. Thus the life of heaven is to be thought of as the complete attainment of an eternal life which can be possessed partially in the present life.

Several philosophical problems have been raised in connexion with the idea of heaven. Such is the question whether heaven can be described as a "place." There are

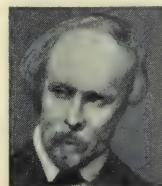
obvious difficulties in supposing that heaven occupies a portion of space, and a common answer is that "Heaven is not a place but a state." This solution is not entirely satisfactory, because it is not easy to see how individual existence can be preserved if the future life is not accompanied by conditions analogous to those of space. The scientific and philosophical conceptions of space are now the subject of much discussion, and it is possible that new light may be thrown upon the future life.

W. R. Matthews

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Heavitree. Parish and village of Devonshire, England. It is 1 m. E. of Exeter, and the Exeter City asylum is here. Pop. 10,950.

Hebbel, CHRISTIAN FRIEDRICH (1813-63). German dramatist and poet. He was born at Wesselburen,



C. F. Hebbel,
German dramatist

Slesvig-Holstein, March 18, 1813, the son of a mason. He was enabled to study at Hamburg, Heidelberg, and Munich, and in 1842 his first tragedy, Judith, brought him immediate

fame. It was followed by Maria Magdalena, 1844, the best of his earlier plays, and a forerunner of the naturalistic drama.

His later plays included Herodes und Marianne, 1851; Gyges und sein Ring, 1855; and the trilogy, Die Nibelungen, 1862, the two last named being his masterpieces. He also published two volumes of Gedichte (poems), in 1842 and 1848. He died in Vienna, Dec. 13, 1863. His Tagebücher (Diaries) were published in 1887. See Life and Works, T. M. Campbell, 1919.

Hebburn. Urban dist. and town of Durham, England. It stands on the Tyne, and is virtually a suburb of Jarrow. Shipbuilding, engineering, and chemical, rope, and sail manufactures are the chief industries. The council maintains a public park. Pop. 21,770.

Hebden Bridge. Urban dist. and town of W.R., Yorkshire, England. It stands on the Hebden and Calder rivers, 8 m. W.N.W. of Halifax, on the L. & Y.R. The Hardcastle Crag, a favourite resort, are 3 m. to the N.W. The manufactures consist of cotton, silk, and

fustians, and there are also dye-works and foundries. The council owns the water and electricity undertakings. Pop. 7,170.

Hebdomadal Council (Gr. *hebdomos*, seventh). In the university of Oxford, a board appointed in 1631 to hold weekly meetings to discuss matters affecting the government of the university, and submit legislative measures to convocation. It is composed of the chancellor, vice-chancellor, and proctors, *ex-officio*, and of 18 other members of the university, elected by congregation, and sitting for six years. Of these 18, six are heads of houses, six professors, and six members of convocation. See Oxford University.

Hēbē (Gr., youth). In Greek mythology, the goddess of youth. She was the daughter of Zeus and Hera, and was given in marriage to Heracles when he became a god.



Hēbē, the goddess of youth, from a statue by Thorwaldsen

Thorwaldsen Museum, Copenhagen

She was the cup-bearer of the gods before Ganymede (*q.v.*). Her Roman counterpart was Juventas, who typified also the eternal youth of the Roman state. See Canova.

Heber, REGINALD (1783-1826). British prelate and hymn-writer. He was born, April 21, 1783, at Malpas, Cheshire, where his father was rector, and educated at Brasenose College, Oxford. He won prizes for the English essay, and Latin and English verse, the last named



Reginald Heber
After T. Phillips

by his poem, Palestine, 1803.



Hebden Bridge, Yorkshire. View of the town from Wood Top, a neighbouring hill

Valentine

From 1804 until 1807 he was a fellow of All Souls. Having married a daughter of Dr. Shipley, dean of St. Asaph, he became incumbent of Hodnet, Shropshire. He was Bampton lecturer, 1815; preacher at Lincoln's Inn, 1822; and second bishop of Calcutta, 1822-26. He died April 3, 1826, at Trichinopoly. He was a man of winning personality, distinguished by devotion to duty. He wrote a memoir, and edited the works, of Jeremy Taylor, 1822, and was the author of a number of hymns, including Holy, Holy, Holy, Lord God Almighty, and From Greenland's Icy Mountains. See Lives, A. Heber, 1830, and G. Smith, 1895.

His half-brother, Richard Heber, born at Westminster, Jan. 5, 1773, was educated at Brasenose, was M.P. for Oxford University, 1821-26, and was one of the founders of the Athenaeum Club. He died at Pimlico on Oct. 4,

being a member of the Cordeliers Club (*q.v.*), and issued several pamphlets in 1790, but became more widely known by his conduct of the journal *Le Père Duchesne*. His arrest was ordered in May, 1793, but popular demonstrations in Paris forced his release. Hébert was notorious for his accusations against Marie Antoinette, and instituted the so-called cult of the goddess of Reason. He was guillotined March 24, 1794.

Hébert, LOUIS PHILIPPE (1850-1917). French-Canadian sculptor. Born in Quebec Province, he studied art in Paris. His statues won him considerable reputation in Paris and elsewhere, his full-length of George Cartier (*q.v.*) being awarded the prize offered by the Dominion Government, and others were set up in Montreal. In 1901 he was made a chevalier of the legion of honour. He died June 13, 1917. See Frontenac.

HEBREW LANGUAGE, LITERATURE AND RELIGION

M. A. Canney, M.A., Prof. of Semitic Languages, Manchester University

The article supplements the historical sketch of the Jews. See articles on Canaan, Jerusalem, Palestine, and other places and countries associated with this people. See also Alphabet; Bible; Old Testament; the articles on the books of the O.T.; and those on the great Hebrews, e.g. Abraham, Moses, etc. See also Jehovah

Hebrew belongs to the Middle Semitic or Canaanitish branch of the Semitic languages, and is related closely to Arabic (S. Semitic), Aramaic (N. Semitic), and Babylonian (E. Semitic). The term Hebrew, originally a gentile, derived from a word meaning "country on the other side," was applied by neighbouring peoples to the people "on the other side," i.e. on the other side of the Jordan, or more probably of the Euphrates. Whatever the precise origin of the language, it developed in Canaan, and in Isaiah xix, 18, is described as "the language of Canaan." Elsewhere in the O.T. it is referred to, not as the Hebrew language,

but as "the Jews' language." Hebrew is written from right to left. The old character resembles the Phœnician. This was exchanged about the 4th century for the "square character" employed in Hebrew bibles. Originally Hebrew writing consisted only of consonants, as it still does in the Synagogue scrolls of the Law. The system of vowel-signs now in common use was introduced by the Masoretes in the 7th century in order to preserve the traditional pronunciation (*masora*, "tradition").

The grammatical structure of the language presents some curious characteristics in common with the

other Semitic languages. Words are mostly triliteral, and compounds are very rare. The verb has only two tense-forms, which express the state rather than the time of an action. The noun has only two genders, masculine and feminine, neuter ideas being expressed by the latter. Nor has it any cases in the Greek and Latin sense. These are expressed partly by prepositions. There is a comparative scarcity of adjectives, which is compensated for by an idiomatic use of nouns (e.g. "son of death"—worthy of death). Syntactical relations are expressed very simply. In fact, it is characteristic of the purest Hebrew that the clauses are short and simple. The poetry is distinguished from the prose, not by rhyme (which is avoided), but by rhythm.

Outside the O.T. only a few examples of the old Hebrew or old Canaanitish literature have survived. In particular, we have a number of Canaanite glosses in the Tell el-Amarna Tablets (c. 1400 B.C.), an inscription of Mesha, king of Moab (c. 850 B.C.), commonly known as the Inscription of Mesha, or as the Moabite Stone, and the 8th century Hebrew inscription, usually described as the Siloam Inscription because it was discovered on the wall of the Pool of Siloam at Jerusalem. The language of all these is related closely to the language of the O.T. In the O.T. itself reference is made to several ancient writings, more of the nature of books, which were used as sources.

Early Poetical Fragments

The most ancient of these, fragments of which are preserved in the O.T., were poetical. They seem to have been collections of ballads and songs celebrating great events and exploits. Special mention is made of the Book of Jasher (Josh. x, 13; 2 Sam. i, 18) and the Book of the Wars of Jehovah (Num. xxi, 14, 15). From such collections no doubt were drawn fragments like the Song of the Well (Num. xxi, 17, 18) and the Song of Deborah (Judges v). Mention is made also of early prose records, such as the Book of the Acts of Solomon (1 Kings xi, 41), the Book of the Chronicles of the Kings of Israel (1 Kings), and the Book of the Chronicles of the Kings of Judah (1 Kings). There were also collections of wise sayings (Proverbs xxiv, 23).

Between the earliest (c. 1200–1000 B.C.) and latest portions (c. 150 B.C.) of the O.T., or between the Exilic and Post-Exilic writings which together comprise Biblical Hebrew, there is a marked dif-

ference in style. After the Fall of Samaria in 721 B.C., and still more after the Fall of Jerusalem in 586 B.C., Aramaic, the spoken language of the population that surrounded the Jews, made gradual but persistent encroachments upon Hebrew. If the language was spoken still and understood by the people in the time of Nehemiah (5th century B.C.; Neh. xiii, 24) and of the rise and development of the Synagogue (430–330 B.C.), it had lost much of its purity.

Aramaic Influence

The literature from the time of the Exile to the Maccabean period (c. 160 B.C.) shows more and more in style and vocabulary the overpowering influence of the official language of the western half of the Persian Empire (Aramaic). But

Form	Equivalent	Name	Signification
א	'	Aleph	Ox
ב	b, bh	Beth	House
ג	g, gh	Gimel	Camel
ד	d, dh	Daleth	Door
ה	h	He	Window
ו	v	Vau	Hook
ז	z	Zain	Weapon
ח	ch	Cheth	Fence
ט	t	Teth	Snake
י	y	Jod	Hand
כ	k, kh	Caph	Bended hand
ל	l	Lamed	Ox goad
מ	m	Mem	Water
נ	n	Nun	Fish
ס	s	Samech	Prop
ע	e	'Ain	Eye
פ	p, ph	Pe	Mouth
צ	ts	Tsaddi	Fish hook
ק	q	Koph	Back of the Head
ר	r	Resh	Head
ש	sh or s	Schin	Tooth
ת	t, th	Tau	Cross

Hebrew Language. The Alphabet

popular works seem to have been written as late as 50 B.C. (e.g. the Book of Judith).

Hebrew, therefore, can hardly be said to have been dead long before the time of Christ, though by that time Aramaic had become the spoken language. We witness the last phases of the struggle between Hebrew and Aramaic on the one hand and Hebrew and Greek on the other in some of the latest books of the O.T. and in some of the books of the Apocrypha. The book of Ezra (between 300 and 250 B.C.) and the book of Daniel (c. 164 B.C.) are partly in Aramaic.

The book of Ecclesiasticus (O.T. Apocrypha), composed about 200 B.C., was written in Hebrew, though much of it has survived only in Greek and other versions. It is significant that in order to make this work better known to Jews, it was translated into Greek in 132 B.C. by the author's grandson, who tells us in a prologue that the task of translating Hebrew into Greek already presented difficulties. Again, whereas the first book of Maccabees (O.T. Apocrypha), composed about 125 B.C., though preserved only in Greek and other versions, was written originally in Hebrew, the second book of Maccabees (O.T. Apocrypha), composed between the years 60 B.C. and A.D. 1, was written from the first, like most of the other books of the O.T. Apocrypha, in Greek.

If a number of the works known as Pseudepigrapha, a body of literature written under assumed names between 180 B.C. and A.D. 100, were composed in Hebrew, the reason was to give them, in addition to the prestige of a famous name, the further authority and sanctity of the sacred tongue, regardless of the fact that this was understood no longer by the bulk of the people.

Origin of Targums

Long before the time of Christ it had become necessary, even in the synagogues, to explain the language of the sacred writings. This was done by an official interpreter known as *Targoman* or *Methurgeman*. At a later date these translations were committed to writing and received the name *Targum*.

In the countries of the Dispersion, of course, Hebrew would be forgotten sooner than in Palestine. As early as the 5th century B.C. Jews went to Egypt; others followed under Alexander the Great and the Ptolemies, forming important colonies. Consequently, long before books had ceased to be written in Hebrew in Palestine, part of the O.T. had to be translated into Greek for the sake of the Greek-speaking Jews of Alexandria. The beginning seems to have been made in the reign of Ptolemy Philadelphus (284–247 B.C.).

Before the end of the 2nd century B.C. the larger portion of the O.T. existed in Greek. The spread of the Greek language involved also the spread of Greek civilization. There arose and developed, not only in Alexandria and elsewhere, but even in Palestine, an important Jewish-Hellenistic literature. The authors of some of the O.T. Apocrypha (e.g. the Book of Wisdom) and of the Pseudepigrapha (e.g. the Book of the Secrets

of Enoch) were Alexandrians; but the chief Jewish-Hellenistic writers were Philo of Alexandria and Josephus of Jerusalem.

Philo seems to have been born between 30 and 20 B.C., and to have died between A.D. 45 and 50. Among other works he wrote a *Life of Moses* and a history of the persecutions endured by the Jews in his own time, of which only part has been preserved. The treatise *On the Contemplative Life*, ascribed to him, perhaps belongs rather to the 3rd or 4th century A.D. Josephus, the Jewish historian, who was born A.D. 37-38 and died about 100, completed his book on the Wars of the Jews before 79, and wrote his *Antiquities* and his *Reply to Apion* about or soon after 93-94.

After the destruction of Jerusalem in A.D. 70 a reaction against the use of Greek set in. When all else was lost, the sacred writings and the sacred language assumed a new sanctity. Hebrew was resuscitated and developed, not indeed as a popular speech, but as the language of books and scholars. Hence arose Post-Biblical or Talmudic Hebrew.

Books of the Law

The Hebrew law (the *Torah*) became the text for numerous comments and legal discussions by the Jewish rabbis. These pronouncements at first constituted an oral tradition; afterwards (c. A.D. 200) they were written down and incorporated, probably by pupils of Shammai and Hillel, in the *Mishnah*, a work that forms the basis of the larger work known as the *Talmud* (*q.v.*).

Closely related to these discussions is a branch of literature which consists of commentaries on the sacred text, called *Midrashim* (singular, *Midrash*). The earliest of these belong to the 2nd century A.D. The Talmudists (2nd-5th centuries) were succeeded by the Masoretes (5th-8th centuries), the Jewish scholars who fixed the text of the O.T.

Another revival of Hebrew took place about the 10th century. There arose, in emulation of the Arab grammarians, a notable school of Hebrew grammarians and exegetes. Representatives of this school include Saadia of the Fayûm (892-942), Rashi (1040-1105), Aben-Ezra (1088-1167), Moses Maimonides (1135-1204), and David Kimchi (1160-1240). The language used is a new development, and is even less pure than Talmudic Hebrew. It is known as New Hebrew or Rabbinic Hebrew (not to be confused with Yiddish). Aben-Ezra was also a poet whose name recalls the fact that the 10th cen-

tury saw the rise, especially in Spain, of a rather remarkable school of New Hebrew poets.

The beginning of the 18th century brought another renaissance in Hebrew letters, which started in Italy with the activities of M. H. Luzzatto, philosopher, poet, and dramatist. The movement spread to Germany, which in course of time became its centre (the so-called Haskalah period, c. 1750-1850). Then, in the early part of the 19th century, the centre of activity was transferred to Galicia (the Galician period).

By the middle of the 19th century the lead was taken by Russia, which produced such famous writers as Abraham Mapu (1808-67), a creator of the Hebrew novel, Judah Loeb Gordon (1831-92), the poet, Perez Ben Moshe Smolenskin (1839-94), the essayist and novelist, and Constantine A. Shapiro (1840-1900), the poet. In our own time poets like H. N. Bialik, Saul Tschernihovsky, Jacob Cohen, and Z. Schneer have greatly enriched the storehouse of Hebrew literature. The language of the modern writers, popularly known as Modern Hebrew, aims at keeping as close to the classical model as possible.

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HEBREW RELIGION. This claims exceptional consideration as the parent of two other great and world-wide monotheistic faiths, Mahomedanism and Christianity. Its wonderful development was not quite an ordinary evolution, because in a special degree it was carried from one stage to another by a series of great men who appeared suddenly as leaders and prophets. Among the patriarchs an outstanding figure is that of Abraham, who is said to have led a migration of certain nomadic tribes from Mesopotamia (Ur of the Chaldees) to Palestine; and there is a persistent tradition that Abraham was spiritually the father of Israel. It has even been suggested that the migration of Abraham was due essentially to a religious impulse; it

was a protest against degeneration in the Babylonian moon-worship, or against the polytheism cultivated in Babylonia by the Hammurapi dynasty (so Jeremias).

Moses, however, was the first prophet, and the founder of the Hebrew religion. At first the migrating tribes seem to have shared the beliefs of other Semitic nomads. They believed in powerful demons or spirits which inhabited stones (the sacred stone of Bethel, Gen. xxviii, 22), trees (the sacred oracular tree at Shechem, Gen. xii, 6; Deut. xii, 3), springs (the sacred wells at Kadesh, Gen. xiv, 7, and at Beersheba, Gen. xxi, 28-30, 31), and even animals (the brazen serpent, Nehushtan, Num. xxi, 4-9; 2 Kings xviii, 4). Natural boulders were used for altars, and sacrifices were not prominent. Where blood was shed, it was for the most part used for blood-covenants.

In Egypt the Hebrew tribes do not seem to have been much impressed or affected by the more developed religion which they found there. But here a leader arose, who had clearly been uplifted and inspired by stirring religious experiences (Exod. iii, 2-4). It is possible, as Jeremias has suggested, that, when Moses fled from the court of Egypt into Midian, where he became a shepherd in the service of Reuel or Jethro, the priest of the Midianites, he did so because on religious grounds he had become unpopular at the Egyptian court. In any case, if he was seeking a fresh religious stimulus, he would seem to have found it among the Midianites.

Recent research indicates that before Yahweh (Jehovah) was proclaimed by Moses the covenant God of Israel, he had long been a tribal deity of the Kenite-Midianites. Moses founded the priesthood, being himself both prophet and priest. Inspired by Yahweh, he gave the people ten simple commandments (Exod. xxxiv). The sanctuary of Yahweh was a sacred ark, probably an ancient object which had acquired a new significance.

At this stage the religion may be described as monolatry. Yahweh is the one officially recognized God of Israel, but he is not the only God. In Canaan the Hebrews met with a rather elaborate Canaanite cultus. This in course of time they appropriated in large measure. Sacred shrines and fixed altars were taken over for the use of Yahweh. The sacrificial system and the agricultural festivals of the Canaanites were adopted. Sacrifices are now regarded for the most part as gifts, and special importance is attached to first fruits. Three times in the year all the males in Israel are

commanded by Moses to appear before Yahweh—at the Matssoth Festival or Feast of Unleavened Bread, at the Feast of Weeks or Harvest Festival, and at the Vintage or Feast of Tabernacles; all were originally agricultural festivals (Exod. xxxiv, 14–26).

The rise of a priesthood was inevitable. This was hereditary. An early example of the teaching of the priests is provided by the Book of the Covenant (Exod. xxi, 1–xxiii, 13). The cultus, of course, was not yet centralized. Yahweh was identified with the local Baals of the Canaanites, and Bethel, Gilgal, Dan, and Beersheba appear as favourite places of pilgrimage. At about the time of the institution of the monarchy we hear of a body called the “sons of the prophets.” These seem to have constituted a prophetic guild or fraternity, the members of which were able to arouse in themselves and others great religious enthusiasm (1 Sam. xix, 20).

They were organized by Samuel, called the seer of Ramah; and with them the prophets have emerged as a power to be reckoned with. In the reigns of Ahab of Israel (876–854 B.C.) and Jehoshaphat of Israel (873–849 B.C.), in the persons of Elijah and Elisha the prophets begin to assume an active and commanding rôle as religious and social reformers. Hebrew religion now begins to lay stress on ethics rather than on ritual. With the emergence of the great prophets, we arrive at a development of Hebrew religion which may be described as monotheism.

Monotheism of Early Faith

The earlier religion tolerated other deities; the prophetic religion does not. In spite of the curious and doubtful phenomenon presented by the Egyptian king Amenophis IV or Akhenaton, this ethical monotheism is the distinguishing feature of early Hebrew religion. The prophets wished to purge the religion of all heathen contamination. They opposed strenuously the sacrificial cultus, and proclaimed that Yahweh takes no pleasure in sacrificial feasts (Amos v, 21–24, iv, 4; Hos. vi, 4–6; Isa. i, 10–17; Jer. vi, 20). They rejected the use of an image as a representation of God (Hos. viii, 4–6, x, 5, xiii, 2). They even denied the superiority of the Israelites. The dark-skinned Ethiopians are just as dear to Yahweh as the children of Israel. Amos found cherished among the people a well-established doctrine of the Day of Yahweh as a day when Yahweh would make them triumphant over all their enemies. He transformed it so

radically and ethically that “instead of Israel triumphing over her enemies on that day, she is herself to be humiliated, and that by Yahweh himself.” (See Amos and Hosea, p. 131, W. R. Harper, 1905, in *Int. Crit. Comment.*)

The eighth century prophets exercised a very great influence on the Hebrew religion; but they were idealists, and the immediate circles of their influence were not large. In the reign of Manasseh (686–641 B.C.) there was a religious reaction during which old superstitions were revived and new cults were imported. The prophetic party had to wait patiently for a new opportunity. In the meantime they drew up a new ethical code, the Deuteronomic law (roughly equivalent to Deut. v–xxvi, and xxviii). When the inevitable counter-reaction came in the reign of Josiah, this code was produced and made the basis of a great religious reform (621 B.C.). Various heathen superstitions were discarded, local sanctuaries were abolished, and the cult was centralized in Jerusalem.

Jeremiah and Isaiah

Peake points out that in the author or authors of the new code the priest and the prophet have met. An interest is shown in the externals of religion which was foreign to the great prophets of the 8th century. At the same time, in the spirit of the prophets, a striking humanitarianism is displayed, and “love of others is made secondary only to the love of God.” The prophet Jeremiah, whose call had come in the thirteenth year of the reign of Josiah (627 B.C.), substituted individualism for nationalism in religion, and emphasised the inwardness of religion (Jer. xxxi, 31–34). The prophet known as Deutero-Isaiah developed universalism. Yahweh wills the salvation of the whole world (Isa. xlii, 1–6, xlix, 6, lii, 10). And Israel is the “Servant of Yahweh,” the vicarious sufferer for the sins of all the nations, who by her sufferings makes Yahweh known to the world.

Here we reach what is perhaps the high-water mark of Hebrew religion, but it was too high an ideal. Ezekiel, who was a priest as well as a prophet, understood the limitations of human nature better, and was able to effect a compromise. He was one of the exiles taken to Babylonia in 597 B.C. A disciple of Jeremiah, he reinforced his teaching there (from 592 B.C.); and then, after the capture of Jerusalem and the destruction of the temple in 586 B.C., comforted himself with visions of a restoration of a Hebrew state in

Palestine. To Ezekiel ceremonial and ritual seemed essential, and the direction of the new development represented by the Law of Holiness (about 500 B.C.), and the reform of Nehemiah (about 444 B.C.), had been determined by the activity of Ezekiel.

Day of Atonement

When the cultus was centralized at the rebuilt temple of Jerusalem, the old connexion of the festivals with agriculture was severed, and they were transformed into memorials of historical events. Moreover, a new yearly festival was added, the Day of Atonement (Lev. xvi). A special official class now becomes necessary, a higher order of priests (in contrast to a lower order, the Levites), with a high priest at the head of them (Lev. xxi, 10; Zech. iii, 8).

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Hebrews, EPISTLE TO THE. One of the canonical books of the N.T. In the English versions it bears the title *The Epistle of Paul the Apostle to the Hebrews*. In the epistle itself, however, there is no claim to any particular authorship, and in the oldest MSS. the superscription is simply “to Hebrews.” The epistle is less like a letter and more like a treatise than any other of the N.T. epistles. It can hardly have been written by S. Paul, since it differs radically in language, style, and thought from the other Pauline writings.

The epistle is not included in the Canon of Marcion or in the Muratorian Canon, but it is quoted by Clement of Rome. Clement of Alexandria states that it was written by S. Paul in Hebrew and translated by S. Luke into Greek. Hippolytus and Irenaeus were acquainted with it, but they do not accept the Pauline authorship. The “Hebrews” seem to have been a Jewish Christian community, and most probably they were a section of the Church in Rome.

The use made of the O.T. by the writer suggests that his purpose was to save his readers from a relapse into Judaism. The epistle is, in fact, as Prof. Peake says (*Crit. Intro.* to the N.T., 1909), “an elaborate many-sided demonstration that Judaism is inferior to Christianity.” It would seem to have been written towards the end of the 1st century A.D.

Hebrews. GOSPEL ACCORDING TO THE. One of the more important of the N.T. Apocrypha (*q.v.*), which has survived only in fragments found in the writings of the ancient fathers of the Church. It seems to have been written originally in Aramaic, and to have been intended for the Jewish Christian congregations of Palestine. According to Harnack, it was composed between A.D. 65 and 100. As one of the sources for a life of Jesus, it is ranked by Oscar Holtzmann (Life of Jesus, 1904) with the gospel of S. John.

Hebrides. Large group of islands lying off the W. coast of Scotland. They are usually divided into the Inner and Outer Hebrides, which is descriptive of their position in regard to the mainland. The two groups are separated from each other by the Little Minch, which is about 12 m. across in the narrowest part. The Inner Hebrides include Skye, Mull, Islay, Jura, Colonsay, Tiree, Coll, and some smaller ones, Eigg, Rum, Conna, Staffa, and Iona; also Rona, Raasay, and Oronsay. These are known to geologists as the trap islands, as they are composed of basaltic or trap rocks. On Mull is Ben More, the highest point in the group. The Outer Hebrides form a continuous series of islands extending for about 120 m. The largest is Lewis, with Harris; others are N. and S. Uist, Benbecula, Barra, Scarpa, and Taransay. These are gneiss islands. The outermost member of the group is St. Kilda, 40 m. west of N. Uist; the Flannan Islands are an isolated group to the west of Harris.

The islands number in all over 500, but only about 100 are inhabited, and many are simply islets of bare rock. They fall within the counties of Ross and Cromarty, Inverness and Argyll. Rainfall averages high throughout the Hebrides, but on the whole the climate is mild and pleasant. In most parts the soil is sparse and agriculture is difficult, but fair quantities of oats, barley, and potatoes are grown on the crofts. Sheep-rearing and fisheries are the staple industry of most of the islands.

Stornoway, on Lewis, is an important herring centre; whisky is distilled in Skye, Mull, and Islay; tweeds are made in Harris; and slate is quarried in Luing, Easdale, and Seil. There are no rly. lines, but communication with the mainland at various points is generally frequent enough for practical purposes. The total area is about 2,800 sq. m.; pop. about 100,000.

The Hebrides, known to Ptolemy as the Eboudai, were invaded

by successive Scandinavian bands between the 6th and 9th centuries, and, together with the Orkneys, Shetland, and the Isle of Man, fell under the dominion of Harold I of Norway c. 890. Norwegian rule maintained itself against several attacks by the Scottish kings, but in 1266, after his victory at Largs in 1263, Alexander III secured their cession to the Scottish crown for a payment of 4,000 merks.

In the 14th century the island dynasty known as the Lords of the Isles (*q.v.*) first appeared in John Macdonald of Islay, and the next two centuries were filled with the feuds of rival chieftains and clans, on the islands and mainland—Campbells, McNeills, Macleans, Macleods, and others.

The Jacobite risings of 1715 and 1745 found strong support in the Hebrides, but the chiefs paid for their participation by the abolition of their old hereditary jurisdictions in 1748. This was the first step towards pacification, and by the time of Johnson's visit to the Hebrides, 1773, considerable progress had been made.

As in many parts of the Highlands, the introduction of large-scale sheep-grazing brought many evictions and much distress among the crofting class towards the middle of the 19th century, although Canada and Australia received large numbers of Hebridean emigrants. The result was frequent "land-grabbing." In 1918 Lord Leverhulme (*q.v.*) purchased the island of Lewis and part of Harris to develop the fishing and weaving industries.

The Hebrideans retain many distinctive characteristics. Gaelic is spoken in most parts, and there are a large number of Roman Catholics. A great body of Celtic tradition in story and song has been preserved, and recent collections of Hebridean songs, many of unknown antiquity, have made their subtle beauty widely known. See Scotland, Map of; consult also In the Hebrides, C. F. Gordon Cumming, 1883, new ed. 1901; History of the Outer Hebrides, W. C. Mackenzie, 1903.

Hebron (anc. *Kirjath-Arba*; Arab. *El Khalil*). Town of Palestine. It stands in the valley of



Hebron. View of the town of Palestine containing the mosque of Machpelah, where the patriarchs, Abraham, Isaac, and Jacob, are believed to have been buried

Mamre, and partly on the slopes of two low hills, 16 m. S.S.W. of Jerusalem. A sacred city, it is one of the oldest in Palestine, and is many times mentioned in the Bible. It was the abode of Abraham, Isaac, and Jacob, besides other patriarchs, and its old walled mosque of Machpelah is supposed to cover the tomb of Abraham. When Moses sent spies to view the Promised Land, they went to Hebron. Joshua gave it to Caleb, and it was afterwards made a city of refuge (Joshua xx, 7). Here David was anointed king (2 Sam. v, 1-3), and he chose it for his first capital.

The seat of a bishop in A.D. 1167, twenty years later it fell into the hands of the Saracens, and it remained in Mahomedan hands until the termination of the Great War. Always regarded with reverence, it was one of the four sacred cities, Mecca, Medina, and Jerusalem being the other three. The modern town is surrounded by vineyards, and there are manufactures of glassware and goatskin water-bags. It is the terminus of the road S. from Jerusalem through Bethlehem. In the vicinity, at Mamre, is Abraham's oak. It was occupied by the British under Allenby, Dec. 7, 1917. Pop. 22,000.

Hébuterne. Village of France, in the dept. of Pas-de-Calais. It lies slightly S. of Gommecourt on the Albert-Arras road, about half-way between those towns. It was prominent in the Great War, being until July 1, 1916, in the British front line. It was an assembly point for the battle of the Somme, and from here a strong British force made a turning movement around the high plateau of Serre, in conjunction with another attacking force that set out from Auchonvillers towards Beaumont-Hamel. After the Great War the village was "adopted" by Evesham. See Somme, Battles of the.

Hecataeus of Miletus (c. 550-476 B.C.). One of the Greek logographers or writers of history in prose before Herodotus. He took an active part in the revolt of the Ionic cities of Asia Minor against Persia (502-494). A great traveler, his *Journey round the World* contains a geographical and historical account of Europe, Asia, and Libya, with a map.

Hecate. In Greek mythology, the goddess of night, the moon, child-birth, and of magic. In art she is represented in triple form, probably symbolic of her different spheres. She is often confounded with Aphrodite and Selenē. *Pron.* Hek-a-tee.

Hecatomb (Gr. *hekatōn*, hundred; *bous*, ox). Originally, in ancient Greece, the sacrifice of 100 bulls and then that of any large number of victims. In modern speech the word is used of any great sacrifice or slaughter. *See* Sacrifice.

Hecker, FRIEDRICH KARL FRANZ (1811-81). German politician. Born in Baden, Sept. 28, 1811, he



F. K. F. Hecker,
German politician
After Scherlitz

practised law in Mannheim. In 1845 his uncompromising democratic sentiments, which had already made him conspicuous in the Baden parliament, brought about his banishment from Prussia. The revolution of '48 saw him again to the front, and he strove his utmost to establish a republican government on a stable basis.

His attempts having failed, he transferred his operations to S. Germany, where he organized bands of malcontents with the idea of terrifying the smaller states. Driven into Switzerland, he emigrated to America and occupied himself on his Illinois farm until the outbreak of the Civil War, when he entered the Federal army and rose to be brigadier-general. His latter years were spent at St. Louis, where he died March 24, 1881.

Hecker, ISAAC THOMAS (1819-88). American divine. Born at New York, Dec. 18, 1819, he became a member of the Brook Farm (q.v.) community, and for a time lived with Thoreau at his Hermitage in the woods. Becoming a



Isaac T. Hecker,
American divine

Roman Catholic, he joined the Redemptorist Order in 1845, and worked for some years in England, where he was ordained in 1849. In 1857 he returned to America, severed his connexion with the Redemptorists, and founded the Order of Paulists for missionary work, becoming its first Superior. For over twenty years he edited *The Catholic World*, and founded *The Catholic Publication Society*. He died at New York, Dec. 22, 1888.

Hekmondwike. Urban district and market town of Yorkshire, W.R. It is 8 m. S. by E. of Bradford on the L. & N.W. and L. & Y. Rlys. Blankets, rugs, and carpets are manufactured, and there are iron-foundries and machine and dye works. In the neighbourhood are extensive collieries. The council owns the water supply, and manages the market and annual fairs. The gas supply and tramways are provided by companies. Market days, Tues. and Sat. Near are places connected with the Brontës. Pop. 9,000.

Hectare (Gr. *hekatōn*, hundred; Lat. *area*, area). Superficial or land measure of the French metric system. It is equal to 100 ares (q.v.), or 10,000 sq. metres, being thus equal to 2.471 English acres.

Hectograph (Gr. *hekatōn*, hundred; *graphein*, to write). Device for making a number of copies of a document, etc. It consists of a slab of gelatin material on the surface of which a copy of the document to be duplicated is impressed. The original document is prepared with a special aniline ink, and firmly pressed for a time on the gelatin, which absorbs the ink. From this a large number of duplicates may be obtained very cheaply.

Hector. In Greek legend, son of Priam, king of Troy, and Hecuba, and husband of Andromachē. He was the chief champion of the Trojans during the war with the Greeks, and his character as conceived by Homer makes more appeal to our sympathy and imagination than that of any other leader, Greek or Trojan. He met his death at the

hands of Achilles, who had been roused from his retirement when his friend Patroclus had been killed by Hector. His body was tied to the chariot of Achilles, and dragged off to the Greek camp. At the personal entreaty of the aged Priam, Achilles gave back the body for burial. *See* Iliad; Troy.

Hecuba (Gr. *Hekabē*). Wife of Priam, king of Troy, by whom she was the mother of Hector, Paris, Cassandra, and many other children, according to some legends, 50 in all. At the taking of Troy she was carried away captive by the Greeks to the Thracian Chersonese, where her daughter Polyxena was sacrificed in obedience to the behest of the wraith of Achilles. Polymestor, the king of the country, having murdered her son Polydorus, she avenged his death by killing Polymestor's children, and putting out the king's eyes. Eventually she was metamorphosed into a dog, and threw herself into the sea. The events of her later life are the subject of Euripides' tragedy *Hecuba*.

Hedberg, TOR (b. 1862). Swedish author. Born March 23, 1862, in Stockholm, he became known as a writer of stories, sketches, novels, and plays. Among his novels may be mentioned *Johannes Karr*, 1885; *Judas*, 1886, which he dramatised in 1895; *Ordeal by Fire*, 1890; and among his plays, *A Life Problem*, 1886; *Gerhard Grim*, 1897; and *The Drama of a Home*, 1896.

Hedemarken. Fylka or county of E. Norway, bordering on Sweden. Mountainous in the N., some of its peaks attain an elevation of 6,000 ft. Among its numerous lakes is Lake Fämund and a portion of Lake Myösen on the W. boundary. Hedemarken comprises the valley of the upper Glommen, one of the most fertile regions in Norway. Area, 10,625 sq. m. Pop. 146,831.

Hedge. Live fence in a garden or between fields. In gardens it is formed by the employment of various trees and shrubs, either kept in alignment by cutting and pruning, or allowed to grow freely. Hedges are useful as screens to keep out unsightly objects, such as rubbish heaps and coke mounds. The best quick-growing plants for hedges are privet, whitethorn, laurel, myrobella plum, and eucynymus. All these subjects should be planted in the autumn in country gardens; in the spring, in towns or suburban areas.

Young plants, about 1 ft. in height, give the best results, and beyond an annual dose of sulphate of ammonia watered in during a summer shower, no other stimulant is necessary, but the use of the pruning knife or *sécateur* is

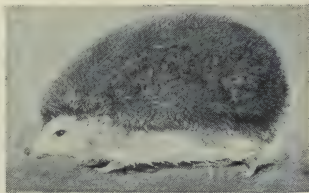


Hector, the Trojan
champion, as sculptured
by Canova

desirable. The most handsome permanent hedges are formed by box, yew, or holly, but all these are of slow growth. The best plants to employ are those which can be procured from nurseries, and which have been transplanted two or three times. They should be planted about a foot apart, and left undisturbed for at least a couple of years, in order that they may establish themselves firmly.

Afterwards they may be cut back at discretion, freely, in order to establish a thick and close blending of the branches at a low level. If cutting back is neglected after the second or third year of establishment the resulting hedge will be thin and "leggy." Yew should never be employed as an outer hedge, i.e. where gardens and pasture meet, as cattle will eat it, with injurious and perhaps with fatal consequences. See Fence.

Hedgehog (*Erinaceus europaeus*). Common British mammal, belonging to a genus with many species in various parts of the world. It is the largest of the British insect-eating animals, and the only one provided with a defensive armour of spines. It is about 10 ins. long, and has a short tail of about 1½ in., a snout somewhat like that of a pig, and very short limbs. Hedgehogs have the power of rolling themselves into a ball, with the head and limbs tucked in so that nothing



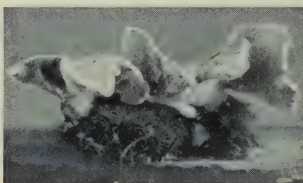
Hedgehog. Specimen of the common British variety

but an array of sharp spines is presented to an enemy. They are nocturnal in habit, and are seldom seen in the daytime, which they spend asleep in hedges and thickets.

The food consists of insects, snakes, worms, snails, and birds' eggs, varied occasionally by small birds and mammals, together with fruit and roots. The hedgehog breeds in summer and early autumn, and produces three or four young ones at a birth. It hibernates during the winter months, sleeping rolled up in a ball beneath a mass of dead leaves or moss. Except where game is preserved, the hedgehog is a harmless animal and is useful in destroying garden pests.

Hedgehog Mushroom (*Hydnum*). Genus of fungi of the natural order Hymenomycetae. They are

characterised by the spore-bearing surface taking the form of fleshy, awl-shaped spines instead of the



Hedgehog Mushroom. Specimen of the edible *Hydnum repandum*

plate-like gills of the common mushroom. Several species are among the best of the edible fungi, notably *H. repandum*, which grows in woods, sometimes forming rings or a segment of a circle. It has a short, thick stem, and the spines which cover the underside of the cup extend some way down the stem. Its colour is a pale flesh tint. Another good esculent is *H. imbricatum*, with rough scaly top of a warm brown colour.

Hedgehog Plants (*Echinocactus*; *Echinopsis*). Two genera of succulent, leafless plants of the natural order Cactaceae. Natives of the hot, dry parts of America, they are more or less globular or



Hedgehog Plant. Specimen of *Echinocactus melocactus* showing, left, spines and, right, flower

cylindrical, with tubercles or ridges that bear bundles of long-spreading spines. The flowers are large and handsome, white, yellow, rose, or purple. *Echinocactus visnaga* attains a very large size, and its long spines are used as toothpicks.

Hedge Hyssop (*Gratiola officinalis*). Perennial herb of the natural order Scrophulariaceae. A native of Central Europe, it has opposite, lance-shaped leaves with toothed edges, and whitish flowers streaked with purple. Formerly used as a purgative and emetic, it was abandoned in medical practice owing to its dangerous properties.

Hedgeley Moor. Spot in Northumberland 8 m. N.W. of Alnwick, famous for the battle fought

here during the Wars of the Roses, April 25, 1464. The Lancastrians were making a new effort and a party of them met here some Yorkists led by Lord Montagu, Warwick's brother. The Lancastrians were worsted, and Sir Ralph Percy, one of their leaders, was killed.

Hedge Mustard (*Sisymbrium officinale*). Annual herb of the natural order Cruciferae. It is a native of Europe, W. Asia, and N. Africa. The leaves are deeply cut into lance-shaped lobes; the flowers are pale yellow, and minute, in a



Hedge Mustard. Flowers and lobed leaves of the wild plant

spray. Another species is the Garlic mustard (*S. alliaria*) with kidney-shaped lower leaves, and larger, white flowers, with a strong odour of garlic when bruised.

Hedge School. Name given to primitive schools in remote districts of the United Kingdom before the spread of popular education. They were common in Ireland, especially in Kerry. The schoolmasters were paid in produce of the soil. The use of the word hedge to imply inferior is exemplified also in such words as hedge priest, hedge marriage, and Shakespeare's hedge-burn (1 Henry VI, iv, 1).

Hedge Sparrow. Popular name for the British accentor (*q.v.*).

Hedging. Art of keeping hedges in order. A newly established hedge must be protected for four years



Hedge Hyssop. Spray of foliage and flowers of the poisonous plant

after which it is trimmed from time to time and occasionally laid. Laying is done from the ditch side, a plank being placed lengthwise and supported on pieces of iron rail, put across the ditch. Dead or unnecessary growths are first cut out. The vertical stems selected as layers are partly cut through, thinned about a foot from the bottom, and bent down into an inclined position, usually to the left. The cut part should be finished off by clean upward slopes, or water will lodge and cause rotting.

The cutting implement used is a hedge slasher or switch bill, consisting of a stout blade, usually slightly curved near the end, and fixed in a long wooden handle. The layers are kept in place by driving in stakes at regular intervals, or actual growing stems may be utilised as "live stakes." The latter should be half cut through near the bottom, as this encourages the growth of shoots below the cuts, and helps to prevent the lower part of the hedge from becoming thin. The hedge is trimmed to a height of 4 ft. or 5 ft., and its top made firm by twining willow branches or other flexible material in and out between the stakes.

Hedin, SVEN ANDERS (b. 1865). Swedish explorer. Born at Stockholm, Feb. 19, 1865, he was educated in Sweden and Germany. In 1885-86 he travelled in S.W. Asia and in Persia. Member of a royal commission to the shah in 1890, he travelled in Khorasan and Turkistan, reaching Kashgar in 1891. Starting again in 1894, he spent the next three years in making his way through E. Turkistan and Tibet to Peking, whence he returned to Europe through Mongolia and Siberia. He published the account of this journey, *Through Asia*, in 1899.



Sven Hedin,
Swedish explorer

From 1899-1902 he travelled in Tibet and the Gobi desert, and made two attempts to enter Lhasa. In 1906 he went once more to Tibet, and made valuable scientific observations in his two years' stay which enabled him to construct the first detailed map of that district. In 1909 he was made a knight (K.C.I.E.), but during the Great War he abandoned the honour. In 1912 he was raised to the Swedish peerage. During the early days of the Great War he was invited by the German

government to make a report on the war devastations in Belgium, and in his subsequent writings he betrayed a venomous animosity to the British. His principal works are *Journey through Khorasan and Turkistan*, 1892; *Adventures in Tibet*, 1904; *Trans-Himalaya*, 1909; *Overland to India*, 1910; *The War Against Russia*, 1915; *Bagdad, Babylon, Ninivi*, 1917.

Hedjaz. Variant spelling of the dist. of Arabia known as Hejaz (*q.v.*).

Hednesford. Village and eccles. dist. of Staffordshire, England. It is 10 m. N. of Walsall, on the L. & N.W. Rly. Standing on a coal-field, mining is the chief industry; tiles are made here. Pop. 10,750.

Hedon. Borough of Yorkshire (E.R.). It stands near the Humber, 5 m. from Hull, and has a station on the N.E. Rly. It was once a flourishing port. It has a notable cruciform church, S. Augustine's, with a beautiful west front and a tower. There is a trade in agricultural produce. The town still retains its mayor and corporation. Hedon received a charter from Henry II, and in the Middle Ages had a trade guild, while much shipping entered the port, which was connected with the Humber. It was made a municipality in 1661 and returned two members to Parliament until 1832. Pop. 1,100.

Hedonism (Gr. *hēdonē*, pleasure). View of life which regards pleasure (bodily or mental) as the greatest good. It was the chief doctrine of the Cyrenaics, and to a certain extent of the Epicureans, and, in the 18th century, in its grossest form it found staunch supporters in Helvétius, Holbach, and La Mettrie, of the French materialistic school. In more modern times a refined form of hedonism, represented by Bentham, James and John Stuart Mill, Herbert Spencer, and others, has been associated with the doctrine of Utilitarianism, which, while upholding the hedonistic theory, sought the greatest happiness of the greatest number. See *Philosophy*; *Utilitarianism*.

Heeley. Suburb of Sheffield. It is served by a station on the Midland Rly. and by tramways. Mainly an industrial area, here are factories or works for the manufactures for which Sheffield is noted. See *Sheffield*.

Heem, DAVID DE (c. 1570-1632). Dutch painter. Born at Utrecht, he was a still-life painter of considerable distinction, although some works of his son and grandson have been wrongly attributed to him. The National Gallery, London, contains a study of fruit and flowers by him, and the Uffizi Gallery at Florence has a good example.

Heem, JAN DAVIDSZ DE (c. 1600-84). Dutch painter. Born at Utrecht, he was the son of David de Heem. He learned much from his father, but surpassed him both in variety of his still-life subjects and in technical equipment. His colour is rich, and, within the compass of still life, he may be counted among the most notable of the minor Dutch artists of the 17th century. Examples of his work are to be found in many German galleries and at the Louvre, Amsterdam, and The Hague, and the Wallace Collection has two.

His son was Cornelis de Heem (1631-95), who also ably carried on the style of his family in painting, working at Antwerp and The Hague.

Heenan, JOHN CARMEL (1835-73). American pugilist. Born at Troy, New York, May 4, 1835, he was apprenticed when 15 years of age to a blacksmith at Benicia, California (whence his sobriquet, the Benicia Boy), and soon became known on the Pacific coast as a strong and bold fighter. In 1860 he came to England and fought his battle with Tom Sayers (*q.v.*), at Farnborough, on April 21. The fight ended in a draw after 44 rounds had been fought.

Heenan afterwards toured in England with circus troupes. On being beaten by Tom King in Dec., 1864, he returned to America, where he made and lost several fortunes. He died at Green River City, Wyoming Territory, on Oct. 25, 1873.

Heep, URIAH. Character in Dickens's novel *David Copperfield*. He is the sneaking clerk to Mr. Wickfield, and unwelcome suitor for the hand of Agnes, who makes



Uriah Heep, the servile, scheming clerk described in *David Copperfield*, as depicted by Fred. Barnard

use of his profession of humility to cloak his envy, hatred, and malice. and to advance his own interests. In the end he oversteps the limits of the law and is sentenced to transportation for life.

Heere, Lucas de (1534-84). Flemish painter. Born at Ghent, he studied under Frans Floris, and while still young, executed for the Regent of the Netherlands a picture of Solomon and the Queen of Sheba, in which Solomon is a portrait of Philip II of Spain. He visited England (1568-77), where he painted a curious allegorical picture, now at Hampton Court, containing the portrait of Queen Elizabeth, and Paris, where he designed some tapestries for Catherine de' Medici, and where he died. His portraits included those of Queen Elizabeth, the earl of Essex, and the duchess of Suffolk.

Heeren, Arnold Hermann Ludw. (1760-1842). German historian. He was born near Bremen, Oct. 25, 1760, and educated at Göttingen. In 1787 he became professor at Göttingen, and died there March 6, 1842, after a distinguished career as a learned and judicial historian. A pioneer in the economic interpretation of history, he wrote many valuable works, some of which have been translated.

Heeringen, Josias von (b. 1850). German soldier. The son of Josias von Heeringen, court president of Hesse, he was born March 9, 1850, and entered the Prussian army in 1867. In 1906 he was a general of infantry and in command of the 2nd army corps. Two



J. von Heeringen.
German soldier.

years afterwards he was minister of war. In 1913 he was inspector-general of the Prussian Guard, the 12th and the 19th army corps at Berlin. When the Great War broke out he was commander-in-chief of the 7th army, which advanced through the N. Vosges in Aug., 1914.

Hefele, Karl Joseph von (1809-93). German theologian and historian. Born at Unterkochen, Württemberg, March 15, 1809, he was educated at Tübingen, where he became professor of patristics and church history in 1840. He was a member of the national assembly of Württemberg, and in 1869 was appointed bishop of Rottenburg. A Roman Catholic, he opposed the dogma of papal infallibility, but submitted to the decree when it was promulgated.

He was the author of an edition of the Apostolic Fathers, a standard History of the Councils of the Church (Eng. trans. 5 vols. down to the year 738), and other works. Hefele died at Rottenburg, June 5, 1893. *Pron.* Hay-feler.

Hegel, Georg Wilhelm Friedrich (1770-1831). German philosopher. Born at Stuttgart, Aug.



Georg Hegel

From a print

27, 1770, he studied at Tübingen and was for some years a private tutor. In 1801 he was appointed to a professorship at Jena, which he was obliged to relinquish owing to the political upheaval. After the battle of Jena, 1806, he removed to Bamberg, where he edited a newspaper. In 1808 he became rector of the academy at Nuremberg, where he remained eight years. In 1816 he became professor of philosophy at Heidelberg, and in 1818 succeeded Fichte at Berlin, where he died, Nov. 14, 1831.

The style of Hegel's writings is extremely involved and obscure. His system is divided into three parts: *Logic*, the science of the pure ideas, of universal notions; the philosophy of Nature, the development of the real world; the philosophy of Spirit (mind), the development of the ideal world, the concrete spirit that attains actuality in ethics, politics, art, religion, and science. These three divisions correspond to three phases of the Absolute—position, negation, and a combination of both. The Absolute is at first pure, immaterial thought; it is then broken up into the infinite atomism of space and time; lastly, it returns to itself and thus becomes actual thought or spirit. The universal principle of the system is the idea; Being and the idea are identical. The idea contains in itself the capacity for developing into all the determining attributes of being, into all that makes Being Being.

At first indeterminate, without properties or qualities, Being passes out of this condition and passes into otherness, its negation, its opposite. This negation becomes the principle of a continuous series of higher and successive affirmations. Thus, pure light is the same as darkness and is at first invisible, but after it has passed into darkness, it returns to itself, takes on colour, and thus becomes visible. Everything must have an

opposite or contradictory; were it not so, nothing could come into existence. The essence of this system is activity and movement. This is a return to the theory of Heraclitus, that nothing remains the same, that all things are in a constant state of flux and their permanence only illusory. Nothing is, but only becomes.

The idea is at once nature, God, and humanity. At first confined within itself, it separates from it and posits itself in what is another self, the external world. It then returns to itself, improved and developed, to go through a further series of developments, becoming ever freer and more conscious of itself. God Himself is nothing but the self-development of the absolute; He does not exist in Himself as a perfect being. Like everything else, He never is, but is always becoming. Similarly, man has no separate personality, being merged in God. Nor is God distinct from the external world; God, nature, and humanity are one. This is pantheism, but a pantheism essentially different from Spinoza's, whose god (substance) is an absolute unity.

By his support of existing Prussian institutions Hegel obtained great political and social influence. His theories are set forth in *The Philosophy of Right*. All changes and revolutions are only milestones on the road of progress. The individual is of no value by himself; he is absorbed in the family, the family in the state, the real substance of which, individuals, are accidents. The state in return must protect the individual and allow him a certain amount of freedom (liberty of the press, trial by jury, popular representation), but not so as to interfere with progress. Constitutional monarchy is the best form of government, a king being necessary "to dot the i's." War is indispensable to progress, might is right, the weaker state is inferior to and absorbed in the stronger. All states will finally be absorbed in the general movement of the universe. *Pron.* Haygel. *See* Pantheism; Philosophy; State.

J. H. Freese
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Hegesias. Greek philosopher. Belonging to the Cyrenaic school, he flourished in Alexandria about 320–280 B.C. Surnamed *Peisithalos*, or recommending death, from his gloomy outlook upon life, he regarded the attainment of positive enjoyment as impossible, and declared that death was preferable. According to him, the prevention of pain and indifference to externalities were the objects the wise man should set before him. His treatise entitled *Apokarterōn*, starving oneself to death, had so great an influence on his followers that some of them put an end to their lives.

Another Hegesias was a sophist and rhetorician, a native of Magnesia at the foot of Mt. Sipylus in Asia Minor. He is considered the originator of the Asiatic or florid school of oratory. He is also said to have written a life of Alexander the Great.

Hegesippus (c. 120–180). Christian writer. He was born in Palestine, was probably a Jewish Christian, visited Corinth, and appears to have written his books in Rome. He prepared a list of the Roman bishops, and wrote a work called *Hypomnemata* (Notes or Memorials), the earliest attempt at a history of the Christian Church, of which fragments are preserved in Eusebius.

Hegesippus is also the name formerly given to the author of a Latin translation, in five books, of Josephus's History of the Jewish War, somewhat condensed and containing additional matter from other sources. The work probably belongs to the 4th century A.D. Unless there is a confusion between this supposed Hegesippus and the Christian writer, it is probable that the name is simply a corruption of the name Josephus, adopted by the author of the translation

Heiberg, JOHANN LUDWIG (1791–1860). Danish poet and author. Born at Copenhagen, Dec. 14, 1791, the son of Peter Andreas Heiberg, a well-known author and dramatist, he early turned to literature. In 1813 he produced an adaptation of Don Juan, and a romantic drama, Pottmager Walter. He wrote a great number of poetical dramas, vaudevilles, etc., his masterpiece being *Elverhø* (The Elfin Mount). He died Aug. 25, 1860.

H.E.I.C.S. Abbrev. for Honourable East India Company's Service.

Heidelberg. Town of Baden, Germany. It stands on the Neckar, 12 m. from its junction with the Rhine, and 54 m. from Frankfurt.

It is an important railway centre and has manufactures, but its main interests are historical, while its beautiful situation attracts many visitors and residents. Of the buildings the chief is the ruined castle. This stands on a hill above the town, and was, in

portions are the Otto Heinrichsbau of the 16th century, a beautiful piece of work, richly decorated with sculptures, and the Friedrichsbau of the 17th. The Friedrichsbau was restored between 1897–1903, and houses a museum of antiquities. The great tun of Heidelberg, a vat holding 47,000 gallons, is in the cellars. The castle has a number of remarkable features, including the chapel. There are beautiful views from the terrace.

Heidelberg itself stands on the S. bank of the Neckar, with the suburbs of Neuenheim and Handschuchshheim on the N. Two bridges, one having a fine gateway,



unite the two. The old buildings are in or around the long High Street. These include the churches of S. Peter and the Holy Ghost. The squares include the market place, the Ludwigsplatz, and Bismarckplatz. There is a town hall, a public promenade, the Anlage, a hall for concerts, etc., and on the market place a remarkable old house. Heidelberg University was founded in 1386 by the elector Rupert. The present buildings were begun in 1712. The new library is a fine erection and houses a most valuable collection of books and MSS. The university has hospitals, laboratories, and an observatory. In the 17th century it was a stronghold of Protestantism.

Heidelberg has manufactures of cigars, leather, etc. It has a service of electric tramways and there is a cable railway from the corn market to the castle. Near the town are some noted beauty spots, especially the Molkenkur and the Heiligenberg with the ruins of an abbey. Heidelberg became important when in the 12th century the count palatine of the Rhine made it his capital. During the Thirty Years' War it was taken, but was restored to the elector in 1648. In 1721 the capital was transferred to Mannheim, and in 1802 Heidelberg became part of Baden. Pop. 56,000.

its prime, perhaps the largest in Germany. It dates from the 13th century, and was enlarged by several electors palatine who lived here. The elector Charles Louis restored it after the Thirty Years' War, but it was much damaged by the French in 1693. In 1764 it was struck by lightning. The chief



Heidelberg, Germany. 1. The Neckar Bridge, with the town and castle. 2. The Friedrichsbau, portion of the castle built 1601–7. 3. The castle from the north

Heidelberg Catechism, THE. Symbol and summary of the reformed evangelical faith, published at Heidelberg, 1563. It was written at the instigation of the elector palatine, Frederick III, by Zacharias Ursinus (1534-83) and Caspar Olevianus (1536-87), with the object of ending the conflict then raging in the Palatinate between Lutherans and Calvinists by setting out the evangelical faith in terms incapable of being misunderstood. It contains 129 questions divided into three parts, treating respectively of man's sin and misery, of his redemption by Christ, and of the Christian life. Into these three divisions the decalogue, the creed, the Lord's prayer, and the doctrine of the Church and the sacraments are fitted as parts of an organic system, making an easy and simple, yet profound and comprehensive, whole, unmatched by any other of the Reformation catechisms.

First issued Jan. 19, 1563, an official Latin translation being published the same year for use in the higher seminaries and schools, the Heidelberg Catechism, despite opposition from the ultra-Lutherans, won its way into the hearts of the Christian world. It was approved by the Synod of Dort in 1619, and has been translated into all the languages of Europe, and into Hebrew, Arabic, and Malay. Moderate in its statement of doctrine, free from metaphysical subtlety, charged with a gracious spirit, and expressed in language of rhythmic beauty, it breathes an undecaying life and remains one of Germany's noblest national monuments.

Heidelberg Jaw. Fossil mandible of primitive man found by Otto Schoetensack, in a sand-pit at Mauer, near Heidelberg, in 1907. From contiguous animal remains it is inferred that the Heidelberg race was later than the Piltown, and may have been a rude precursor of the Neanderthal. See Anthropology; Ethnology; Man.

Heidenheim. Town of Germany, in Württemberg. It stands on the Brenz, 22 m. N.N.E. of Ulm. In ancient times a Roman settlement, it lies at an alt. of 1,617 ft. to the E. of the Swabian Alps, and is overlooked by the ruins of the Schloss Hellenstein. Becoming a place of some importance in the Middle Ages, it is now an industrial town, with manufactures of textile goods, machinery, earthenware, etc. Pop. 17,780. There is a smaller town of the same name in Bavaria, 21 m. S.S.E. of Anspach.

Heidenstam, CARL GUSTAF VERNER VON (b. 1859). Swedish poet and prose writer. At the age

of 17 he went to Paris to study art, but abandoning this as a profession, spent some years in travel.



Verner von Heidenstam, Swedish poet

On his return to Sweden he published his first book, a poem entitled *Wanderings and Pilgrimages*, 1888, which immediately secured him recognition. The poems were followed by prose—tales, sketches, brochures, and a novel of life under Turkish rule in Damascus, *Endymion*, 1889, glowing with colour and romance. *Hans Alienus*, 1892, is a remarkable book, rich in original thought, expressed in a new and beautiful form.

Heidenstam then returned to poetry in *Poems*, 1895, and after some months in Russia published his most popular work, *The Carolins*, 1897, which consists of a series of stories centred round Charles XII, and counts among the finest Swedish prose ever written (Eng. trans. *A King and his Campaigners*, 1902). This and other historical books, notably *The Pilgrimage of S. Bridget*, and *The Swedes and their Chieftains* (Eng. trans. 1909), are masterpieces of their kind, and burn with the author's love of his country. In 1916 Heidenstam was awarded the Nobel Prize for literature.

Heifer. Word of Anglo-Saxon origin meaning a young cow. See Cattle.

Heikoutai. Town of Manchuria. The battle fought here during the Russo-Japanese War, Jan. 16-27, 1905, is sometimes called after it, but is more usually known as San-de-Pu (*q.v.*).

Heilbronn. Town of Germany, in Württemberg. It stands on the Neckar, 28 m. N. of Stuttgart, at a height of 518 ft., and is half ringed by hills commanding fine views, the Schweinsberg (1,223 ft.) giving an extensive panorama of the Black Forest, the Vosges, and other ranges. It is a place of considerable importance in trade and manufacture, but has also some historic buildings and memories. Formerly it was a free Imperial city. The principal church is that of S. Kilian, 13th to 15th century Gothic, with a Renaissance tower, 200 ft. high, built in 1527. S. Nicholas is noted as the first church in which a Protestant service was held in Germany, 1525. Schiller lived for a time in a house close by the church.

Heilbronn is associated, partly through Goethe's early tragedy, with Götz von Berlichingen, who



Heilbronn, Germany. The church of S. Kilian from the south-west

ruled tyrannically from the old Rathaus, a Gothic building adapted to the Renaissance style, and restored in 1895. Down by the river side is the Götzen-turm, where Götz was imprisoned.

Manufactures include paper, sugar, silver-ware, chemicals, etc., while the surrounding district produces large quantities of wine. Goods traffic with Mannheim is carried on the Neckar by a system of chain-towing. Pop. 42,688.

Heil Dir Im Siegerkranz. German national song: Hail to thee with victory crowned. The words were written, to the tune of the English God Save the King, by Heinrich Harries, a Holstein pastor, in honour of the king of Denmark, and were first published in 1790. A few years later it was appropriated, after some adaptation, by Prussia, and remained Prussia's chief national anthem until the Great War, when it was discarded owing to the indisputably British origin of the music.

Heilsbronn. Town of Germany, in Bavaria. It lies 16 m. by rly. S.W. of Nuremberg. Its main interest lies in its old connexion with the Hohenzollerns, many of the Franconian (Nuremberg) line of the family having been buried in the church of the once famous Cistercian abbey. The three first Brandenburg Hohenzollerns were also buried here. In addition the church contains many memorials of the early Hohenzollerns, and some fine altar-pieces of the Nuremberg school. The building was commenced as a basilica in the 12th century, Gothic additions being made in the 13th and 15th centuries. Pop. 1,366.

Heilungkiang. Province of China, the northernmost of the three provs. forming Manchuria. The capital is Tsitsihar, and other important towns are Aigun and Khailar. Heilungkiang is bounded on the W. mainly by the Argun river, on the N. by the Amur, on the E. by the Sungari, and comprises the valley of the Nonni, tributary to the Sungari, with the surrounding Great and Little Khingan Mts. The Chinese Eastern Rly., a section of the Russian Trans-Siberian line, traverses the S. portion. The chief products are skins and furs. Area, 167,000 sq. m. Estimated pop. 1,500,000. The name Heilungkiang is a variant for the Amur river (*q.v.*).

Heimin (Japanese, commoners). Third and lowest social class under the feudal system in Japan. The *heimin* were divided into farmers, artisans, and tradesmen, and ranked in that order below the samurai, their masters.

The farmers, as the most indispensable contributors to the maintenance of their superiors, and the artisans, who included artists and craftsmen of every kind, were treated with respect, but the trading class was regarded with scornful contempt. None of the *heimin* had any status in social intercourse or any income beyond what they actually earned. See Daimio.

Heine, HEINRICH (1797-1856). German poet. Born at Düsseldorf, Dec. 13, 1797, of a poor Jewish family, he was sent, after leaving school, to Hamburg, where a wealthy uncle, Salomon Heine, initiated him into a business career. He proved himself, however, incapable, went bankrupt, and then, still with the support of his uncle, studied law at the universities of Bonn, Göttingen, and Berlin. In these years, 1819 to 1824, he discovered his lyrical genius under the stimulus of unhappy love affairs with his cousin, Amalie Heine, and, after her marriage, with her sister Therese. In 1822 he published a collection of Poems, followed in 1823 by Tragedies, which, although they contained some of the most familiar poems later incorporated in his Book of Songs, were appreciated by only a few.

In 1825 Heine became a convert to Christianity, and in the same year obtained his degree from Göttingen. Owing to the very great success of his two volumes of Pictures of Travel; The Journey in the Harz Mountains, 1826; The North Sea; Buch Le Grand, 1827, he decided to devote himself to literature; and with the appearance of



H. Heine

(H. Heine)

From a drawing by E. B. Vrietz, 1851

The Book of Songs, in 1827, he became the most popular poet of his day. A visit to London, a stay of some months in Munich, where he was editor of a newspaper, and a journey to Italy provided him with the materials for fresh Pictures of Travel: Journey from Munich to Genoa; The Baths of Lucca, 1830; The City of Lucca; English Fragments, 1831.

Like all young men of letters of the time, Heine was stirred by the July Revolution of 1830, and in 1831, disappointed and embittered by the treatment meted out to him at home, he settled in Paris, which remained his home for the rest of his life. Only twice, in 1843 and 1844, did he revisit his native land. Heine was intimately associated with the literary school of "Young Germany," and when in 1835 the government suppressed the activities of the school, he was included in the ban. This interfered with his literary plans; but his uncle did not withdraw his support, and from 1837 to 1848 he was also in receipt of a pension of 4,800 francs (about £200) from the secret fund of the French Government. In 1834 he became intimate with a Frenchwoman of the people, Eugénie Mirat, who inspired him with a lasting affection; and in 1841 she became his wife.

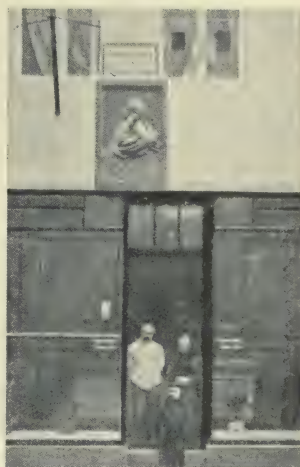
Heine in Paris

During the earlier part of his stay in Paris, Heine's activity was mainly journalistic; he contributed to German newspapers articles on French life, art, and letters. These were followed by four volumes, entitled The Salon, 1834-40, which, however, include much more than criticisms of pictures; the principal content is indeed a study of religion and philosophy in Germany, while the later volumes are mainly made up of short stories, such as The Rabbi of Bacherach.

A later collection bore the title Lutezia, 1854. In The Romantic School, 1836, Heine criticised with uncalled-for virulence the literary school from which he had himself sprung, and in Ludwig Börne, 1840, he attacked his friend and fellow-fighter in the ranks of "Young Germany."

In 1844 he came forward again, with two volumes of New Poems, and a satiric epic, Germany, a Winter Tale. These were followed, in 1847, by Atta Troll, generally recognized as his finest sustained poem, and in 1851 by the collection of poems entitled Romanzero. But in 1845 Heine fell a victim to creeping paralysis, which from the spring of 1848 till his death in Paris, Feb. 17, 1856, kept him practically bedridden. In spite of his sufferings, he maintained his mental vigour and freshness, as is to be seen in the wonderful Last Poems and Thoughts, which were published posthumously in 1869; indeed, it might be said that in these years Heine underwent a kind of spiritual regeneration, which to himself was bound up in some mystic way with the romantic devotion of the young poetess, Camille Selden (La Mouche).

Heine's position among the German lyric poets of the 19th century has been influenced by other than literary factors, and is difficult to define. His Jewish characteristics have been a stumbling block to appreciation by many of his own countrymen, his personal life affords few aspects that awaken sympathetic admiration. And yet The Book of Songs is incontestably the greatest, as it has been the most popular, collection of German lyrics of the



Heine. House in Bolkerstrasse, Düsseldorf, where the poet was born

19th century. At times Heine's poetry seems lacking in the suggestiveness of the lyricism of Goethe, Eichendorff, or Mörike; and only too often he destroys by an ill-placed gibe or satiric quirk the effect of the purest lyric. But, on the other hand, he is free from the vague and nebulous sentimentality into which German poetry too easily falls; his imagery is plastic and his metaphors daring almost to the verge of paradox.

As a prose writer Heine's claims are also high; his style, doubtless modelled in part on that of his French contemporaries, forms the greatest possible contrast to the clumsiness of the German prose style of his time. He began his career as a Romanticist, but became a leader of that school of writers which formed the antithesis and negation of Romanticism, "Young Germany." The tragedy of Heine's intellectual life lay in this discord; he belonged to an age of transition. An exile from his native land, he remained also as a poet a spiritual exile from that romantic world from which he drew his purest inspiration.

J. G. Robertson

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Heinemann, William (1863-1920). British publisher and author. Born at Surbiton, May 18, 1863, he was associated with Nicholas Trübner, the publisher of Oriental works, of whose business, in 1884, he became manager. He founded the publishing house of William Heinemann in Jan., 1890, and issued his first book, Hall Caine's *The Bondman*, the following month. He was author of three plays, *The First Step*, 1895; *Summer Moths*, 1898; and *War*, 1901. He died in London, Oct. 5, 1920.

Heinrich von Meissen. Early German poet, generally known as *Frauenlob* (q.v.).

Heinsius, Antonius (1641-1720). Dutch statesman. Born at Delft, Nov. 22, 1641, he studied law at Leiden, and in 1679 was appointed to a government office in his native city. Intimate with William of Orange, he became foreign minister and pensionary of Holland on the accession of the former to the crown of England, and acted as William's agent in the Netherlands. His unwavering opposition to France made him the successor of William as a fierce opponent of Louis XIV, and in

1702 Heinsius was largely responsible for the alliance of the European powers against the French king. He refused to listen to any suggestion of peace until, deserted by England, he realized the impossibility of continuing the struggle against France alone, and signed the treaty of Utrecht. He died Aug. 3, 1720.

Heinsius, Daniel (1580-1655). Dutch scholar. Born in Ghent, June 9, 1580, he became a pupil of

Scaliger and was made professor of Greek and Latin at Leiden. He wrote Latin poems and edited many Latin classics and learned works. He published his Latin *Orationes*, 1609-21, his tragedy, *The Massacre of the Innocents*, in 1613, and his *Poems* in 1616. He died at The Hague, Feb. 25, 1655.

His son Nikolaas (1620-81), born at Leiden, July 20, 1620, was a great traveller and collector of MSS. He edited a number of Latin classical authors, in which he proposed a vast number of not always felicitous emendations, which gained him the sobriquet of Restorer of the Latin Poets. He died at The Hague, Oct. 7, 1681.

Heir (Lat. *heres*). In English law, the person who succeeds by descent to an estate of inheritance. The person to whose estate he succeeds is called the ancestor. An heir apparent is a person who, if he survives the ancestor, must be his heir: thus, an eldest son is always his father's heir to an estate in fee simple. An heir presumptive is a person who, if the ancestor dies now, would be his heir, but if the ancestor lives, may possibly be defeated by another heir coming into existence. Thus, a childless man's brother may be his heir presumptive, but should the man have a son, the son will displace the brother. In a few cases the eldest son is not the heir, as in the tenure called borough English, where the youngest son inherits.

It is not correct, in English law, to speak of inheriting a sum of money, or any form of property except realty. The chief rules for finding the heir are (1) that descendants take first; (2) if there is no descendant, collaterals succeed; (3) children represent their deceased parents; (4) if males, the eldest male is the heir, but if females, they are all co-heirs. For example, A dies, leaving three sons and three daughters. The eldest son

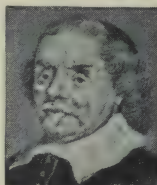
is heir. If the eldest son has died before A, then that son's children take his place, i.e. his eldest son, or failing a son, his daughter. If all A's sons predeceased him, his three daughters inherit together. See *Primogeniture*.

Heirloom. In English law, chattels which descend by custom or settlement to the heir of an estate. Heirlooms do not pass to the executor or administrator with the rest of the property, and they cannot be devised by will away from the heir, who, in his turn, is regarded merely as the owner in trust for his successor. Yet under the Settled Land Act the court may sanction their sale or purchase for the benefit of all parties interested in the estate, though the personal difficulties of an extravagant owner would not be regarded as sufficient reason for such a sale.

A testator may create new heirlooms for his successors. The chief heirlooms are charters, deeds giving evidence of title, and muniment chests in which such deeds are kept; anything which cannot be moved without inflicting damage to house or estate, e.g. mantelpieces and stairs, deer, fish in the lake, and doves; crown jewels, monuments, tombs, banners or escutcheons or arms set up in a church. The word is apparently a compound of heir and loom (A.S. *geloma*), originally meaning any instrument, frame, then property generally.

Hejaz or Hedjaz. Kingdom of Arabia. Long before the close of the Great War the Hejaz, formerly a vilayet of the Turkish empire, had won its independence. This was recognized by the Allies at the end of 1916. The grand sherif of Mecca, the hereditary keeper of the Holy Places of Islam, had proclaimed himself its king in June, 1916, taking the title, Hussein Ibn Ali, with the approval of the Arabs. With a pop. of 300,000, and an area a little larger than that of Great Britain, the Hejaz lies to a depth of some 200 m. along the E. coast of the Red Sea for nearly 700 m., and stretches from Akabah on the N. to Asir on the S., its boundaries on the E. being from N. to S. Great Nefud, Nejd, and the Great Arabian Desert.

It owes its importance to the Holy Cities of Mecca and Medina, from the latter of which the Hejaz Rly., begun in 1901 and completed in 1908, runs N. to Damascus, a distance of 1,105 m. Originally constructed by Turkey on the plea that it facilitated the *haj* or pilgrimage to the Holy Cities, this line was also politically and strategically valuable, as it enabled her



Daniel Heinsius,
Dutch scholar



Hejaz. Map of the kingdom in which are situated the holy cities of the Mahomedan faith

to tighten her hold on the Hejaz, as well as on Asir and Yemen, the provs. S. of it. In Arabia, however, the Arabs, even under Turkish rule, had a large measure of independence, and Turkey retained such authority as she possessed more by subsidising the local chiefs than by armed force, except in the towns, along the rly., and at the ports.

Besides Mecca and Medina, the towns of the Hejaz are Jeddah and Yembo, the ports respectively of these two cities, and Taif, in the S., the centre of the Arabia Felix of old. In these cities and towns live the greater number of the pop. of the country, which for the most part is a raised plateau, whose W. side is formed by rugged mountains that descend sharply to the Red Sea. Lacking perennial rivers, the land is fertile only in its few valleys. The annual *haj*, with its many thousands of pilgrims in normal times, is the chief source of what wealth the Hejaz possesses.

When Turkey entered the war in the beginning of Nov., 1914, the situation in Arabia was quiet, except in Nejd and in Asir, which were in open revolt; in the Yemen the Turks took the offensive against the British in Aden. But the Turks and the Arabs had never amalgamated; the Turk distrusted the Arab, while the Arab looked on himself as the intellectual superior of the Turk. As part of their policy of turkifying their empire, the Young Turks, led by Djemal Pasha, governor of Syria, arrested and executed in 1916 many of the principal Arabs in Damascus and Homs. In the same year Enver

Pasha visited Mecca and shocked the faithful there by his atheism.

On June 5, 1916, the grand sheriff proclaimed his independence at Mecca, and, supported by the Arabs, summoned the Turkish garrison of the Holy City to surrender, but it refused, and held out until June 9. Hussein divided his forces into four; one part remained in Mecca; the second went northwards to Medina under the Emir Feisal, one of his sons; the third, under another son, the Emir Abdullah, marched southwards to Taif; and the fourth, under yet another son, the Emir Zeid, advanced westwards on Jeddah. The grand sheriff appealed to Great Britain for assistance, and thereafter the "Red Sea Patrol" of the British navy cooperated with his forces. Before June was out Jeddah had fallen, and Yembo was taken in July.

In Aug. Hussein issued a proclamation "To the Moslem World," in which he justified his revolt on the grounds of the infidelity of the Young Turks to their common religion, and their persecution of the Arab race. In Sept. Taif was captured, and with other successes, mainly on the coast, in which the British navy had a share, the whole of the Hejaz, except Medina, which Feisal failed to take, and the rly. zone, was cleared of the Turks.

The Arab chiefs realized that they must have an organized army, instead of an undisciplined force of camelry and horsemen. In this effort they were assisted by the Egyptian Government, who sent officers and men to the Hejaz to train the Arabs and others who had joined them from the N. Feisal captured Wejh (El-Wijh) in Jan., 1917, and his force steadily grew into a regular army. He also succeeded in getting all the Arabs in the N., who had been divided by tribal feuds, to support him, among others the sheikh of Howeitat.

During 1917 Feisal made repeated raids on the Hejaz Rly., but the chief Arab success of that year was the capture of Akabah early in Aug. Little occurred in the winter of 1917-18, but by April, 1918, Feisal captured Tafileh, near the S. end of the Dead Sea, and held the latter against a powerful attack by the Turks who had been reinforced by the rly.; he also took El Kerak. Both Maan and Medina held out.

In the summer of 1918 the armies of the king of the Hejaz numbered 40,000 men, who became the extreme right wing of Allenby when in Sept. he rolled up the Turkish army on his left, in the coastal region of Palestine, enveloped and annihilated two Turkish armies, and conquered Palestine and Syria.

In coordination with these operations Feisal, from his base at Um-taiye, E. of the Jordan, cut the Turkish communications on the Hejaz Rly. at Deraa on Sept. 15, and, after occupying that place on Sept. 27, took part in the advance on Damascus, which was entered first by some of his troops on the night of Sept. 30-Oct. 1, he himself entering the city on Oct. 3. During the war the Hejaz forces killed or immobilised 50,000 of the enemy, and their military services were of great value to the Allies. Medina, besieged since June, 1916, capitulated to Hussein, under the terms of the armistice with Turkey, Jan. 1919. See Arabia; Feisal, Emir; Lawrence, T. E.; Palestine, Conquest of.

Hejira or **HEGIRA** (Arab. *hijra*). Word meaning "flight," applied specially to the flight of Mahomet from Mecca to Medina in A.D. 622, from which event the Mahomedan era is reckoned. The Mahomedan era was inaugurated by the caliph Omar in 639 and is reckoned from July 16—the first day of the first month of the year in which the flight took place. Dates of the Mahomedan era are indicated by the letters A.H. (*anno hegira*, in the year of the flight). The Mahomedan year is a lunar one, and so about 11 days shorter than the solar year. To find the year in the Christian era approximately corresponding to a year in the Hejira, subtract 3 p.c. from the Hejira year and add 622.

Hekla or **HECLA**. Active volcano of Iceland. In the S. of the island, it is about 20 m. from the coast and 70 m. E. of Reykjavik. It attains an alt. of 5,109 ft., having one large crater, 1½ m. in circumference and 200 ft. to 300 ft. deep, and several subsidiary ones. It has been active frequently since the



Hekla. The great volcano of Iceland, over 5,000 ft. high

11th century, the eruption of 1845-46 lasting continuously from Sept. to April. In March, 1878, there was another violent outburst. The principal rocks are basalt and lava; the mountain is devoid of vegetation.

Hel. In Norse mythology, daughter of Loki. She is described in the Prose Edda as purely evil, care being her bed, hunger her dish, and starvation her knife. In other myths she was the guardian of the plains under the earth, peopled by the happy dead, as well as of the caves of punishment. *See* Mythology.

Hela. German cruiser. She was torpedoed, Sept. 13, 1914, by the British submarine E 9, 6 m. S. of Heligoland, being the first ship sunk by a British submarine. The Hela displaced 2,000 tons, was 328 ft. long, 36 ft. in beam, and had engines of 6,000 horsepower, giving a speed of 20½ knots. She carried only a few light guns.

Helcosal. Name applied to bismuth pyrogallate employed in the treatment of disorders of the digestive tract.

Helder. Small seaport of the Netherlands, in the prov. of N. Holland. It stands at the N. extremity of the prov., and is separated from the island of Texel by the Mars Diep, a channel 2 m. in width. It is about 40 m. due N. of Amsterdam, with which it is connected by the North Holland canal. The place is protected from the sea by a dyke 5 m. long and 30 ft. wide, sloping 200 ft. into the sea. About a mile E. of the town, at the entrance to the North Holland canal, is the harbour of Nieuwe Diep, where are docks and shipyards, a naval cadet school, and a meteorological station.

Formerly a small fishing hamlet, Helder has developed considerable importance, owing to its position at the entrance to the Zuyder Zee. Off here, in 1673, the Dutch under Van Tromp and De Ruyter defeated the combined English and French fleets. It was fortified by Napoleon in 1811. Pop. 29,891.



Helder, Holland. Typical street of the seaport at the entrance to the Zuyder Zee



Helen of Troy stolen from her husband's house by Paris. A 15th century rendering of the classical story, by Benozzo Gozzoli, 1420-98
National Gallery, London

Helderberg Formation. Rocks of the Upper Silurian system. It is found chiefly in the eastern part of N. America, e.g. New York, the Catskills, New Brunswick, Nova Scotia, and Montreal. Varying in thickness up to 600 ft., these rocks are noted for their fossils.

Helen (Gr. *Helenē*). In Greek legend, the woman of surpassing beauty whose seizure by Paris was the cause of the Trojan War. According to the earlier stories she was the daughter of Tyndareus and Leda, Castor and Pollux being her brothers. In a later version, Leda was visited by Zeus in the form of a swan, and gave birth to an egg, from which Helen, Castor and Pollux came forth.

Helen became the wife of Menelaus, king of Sparta, and when Paris, son of Priam, king of Troy, came there on a visit, Aphrodite, in fulfillment of a promise to give Paris the most beautiful woman in the

world, caused her to fall in love with the handsome visitor. After the capture of Troy Helen returned to Sparta with her husband, though, according to some legends, they sojourned for eight years in Egypt before reaching home. The word is a favourite feminine Christian name, as also its variants Ellen and Helena. The

form Helenus is occasionally used as a masculine name. *See* Troy; consult also Helen of Troy, A. Lang, 1882; The Legend of Fair Helen, E. Oswald, 1905.

Helena. City of Montana, U.S.A., the capital of the state and the co. seat of Lewis and Clark co. Situated 3,955 ft. high at the foot of the Rocky Mountains, on the edge of the valley of the upper Missouri river, it is 73 m. N.E. of Butte, and is served by the Northern Pacific and the Great Northern Rlys. Here are the Montana Wesleyan University, S. Vincent's Academy, and Mount St. Charles College. Other buildings are the capitol, the Federal building, a state and other libraries, and the Y.M.C.A. building. Helena lies in a rich mining region, containing gold, silver, copper, and other minerals, and the city is situated at the mouth of the celebrated Last Chance Gulch, where gold was found in 1864, and from which more than £6,000,000 of gold has been recovered.

The neighbouring mountains are clothed with forests of fir and pine, whose timber feeds several large sawmills. Sheep and cattle are reared, and there are foundries and machine shops, a large smelter and quartz mills, rly. workshops, and candle and soap factories. In the vicinity are medicinal hot springs. Laid out as a mining town in 1864, Helena became the capital of Montana in 1874 on its organization as a territory, and received a city charter in 1881. It was damaged by fire in 1869 and in 1874. Pop. 20,000.

Helena, FLAVIA JULIA (d. 328). Wife of the Roman emperor Constantius Chlorus and mother of Constantine the Great. She was born of humble origin in Nicomedia, and became famous for her devotion to Christianity. In her old age she made a pilgrimage to Jerusalem, and, according to a legend which first appears at the end of the 4th century, she discovered there the sepulchre of Our Lord and the wood of the Cross.

Helensburgh. Borough and watering-place of Dumbartonshire, Scotland. It stands on the N. bank of the Firth of Clyde, 4 m. N. of Greenock and 24 m. N.W. of Glasgow on the N.B. Rly. The public buildings include the municipal buildings, Victoria



Helensburgh arms

Halls, Hermitage School, and hospitals. Founded in 1777 by Sir James Colquhoun, after whose wife it was named, Helensburgh has a pier and esplanade. On the latter is a monument to Henry Bell, the pioneer of steam navigation, who died here in 1830. The council owns the gas and water undertakings, four parks and a recreation ground, an abattoir and the harbour. The beautiful grounds of the Hermitage have been laid out for public use. From Craigendoran, about 1 m. to the E., steamers go to Dunoon and other pleasure resorts on the west coast; and the W. Highland Rly. branches off for Fort William, Mallaig, etc. Pop. 8,500.

Helen's Tower. Three-storeyed building, 3 m. S. of Clondeboye, Belfast, Ireland. Situated on high



Helen's Tower, near Belfast, built in memory of Helen Selina, Lady Dufferin

Valentine



Helensburgh, Dumbartonshire. The esplanade looking south

ground, and approached from the village of Conlig, between Crawfordsburn and Newtownards, it was built by the 1st marquess of Dufferin in memory of his mother, Helen Selina, Lady Dufferin (q.v.). It contains poetical tributes to Tennyson, Browning, and Kipling, and commands views of the Mourne Mts., the Mull of Galloway, and Isle of Man. See Belfast Lough.

Helenus. In Greek legend, son of Priam, king of Troy, noted for his powers of prophecy. Taken prisoner by the Greeks, to whom he declared that Troy could never be taken without the help of Pyrrhus (Neoptolemus) and Philoctetes, after the capture of the city he was allotted to Pyrrhus as part of the spoils. He afterwards accompanied Pyrrhus to Epirus and married Andromachē, the widow of Hector, becoming king of the country after the death of Pyrrhus.

Helfferich, KARL THEODOR (1872-1924). German politician. Born Aug. 22, 1872, he was educated at Munich, Berlin, and Strasbourg universities. From 1901-4 he was professor of political science in the university of Berlin; in 1904 he became a professor at Bonn. An expert in economics, he entered the German foreign office, and was appointed a director of the Deutsche Bank in 1908. On the outbreak of the Great



Karl T. Helfferich, German politician

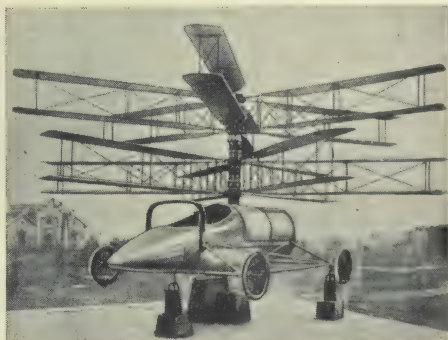
War he was made minister of finance. In 1916 he became secretary for the interior and imperial vice-chancellor, and he held these positions till Nov., 1917. He was German ambassador to Russia, July-Sept., 1918. He was killed in a rly. accident, April 24, 1924.

Helicon (Gr. *helikōn*). Name

sometimes given to the circular bombardon (q.v.). The first meaning of the Greek original is the thread spun from the distaff to the spindle, then a nine-stringed instrument.

Helicon (mod. Zagará). Mt. in the S.W. of Boeotia, ancient Greece. Its beautiful scenery caused it to be popularly regarded as the home of the Muses, to whom there was a temple and in whose honour games were celebrated. The well of Aganippē at its foot, and the fountain of Hippocrēnē were also sacred to them. Remains of the temple, of a theatre, and of a colonnade have been discovered. See Mythology.

Helicopter (Gr. *helix*, spiral; *pleron*, wing). Name given for the type of flying machine which can raise itself vertically by means of horizontally revolving propellers or air-screws. The advantages of such a machine, especially for war purposes, enabling it to rise and land on the deck of a warship with ease, hover in the air for scouting purposes, and land in comparatively small areas, are so great that many attempts have been made to build a successful full-sized helicopter, though as yet

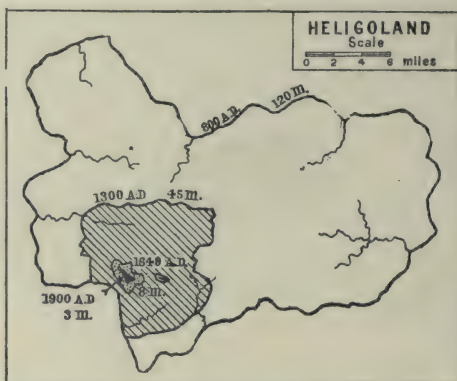


Helicopter. Model of flying machine designed to rise vertically from the ground. Two sets of biplane wings, revolving in opposite directions, provide the lift. In event of engine failure, wings act as ordinary biplane wings for gliding to earth

without success. In January, 1921, Etienne Oehmichen tested a helicopter in France which offered a part solution of the problem. The helicopter screws lifted 584 lb. with a 25-h.p. engine, over 23 lb. per h.p. No attempt was made, however, to provide a method for balancing or moving forwards. Both the British and French Governments experimented with helicopters in 1920 and 1921, and great advances have been made towards the solution of the problem.

The greatest difficulty to be faced with the helicopter is that of stability when once in the air. Experiments have proved that it is perfectly possible to construct a machine that will lift itself, but it must also support itself partially if the engine stops, so that it can make a safe gliding descent as in the case of an aeroplane. The first attempt to construct a helicopter on scientific lines was by Leonardo da Vinci about 1500, since which time there have been many machines built, none of which have raised themselves more than a few inches off the ground. See Aeronautics.

Heligoland OR HELGOLAND. Island in the North Sea, included in the Prussian prov. of Slesvig-Holstein. It is rocky, with an elevation of about 190 ft., and is situated about 44 m. from the mouths of the Weser and Elbe rivers. Its circumference is about 3 m., having been steadily reduced by erosion from 120 m. in A.D. 800 and 45 m. in A.D. 1300. Heligoland, which means "Holy Land," was taken from Holstein by Britain in 1807. Its limestone and sand-



Heligoland. Map illustrating the effects of erosion, by comparing the island coast-line of 120 m. in A.D. 800 with the coast-line of 3 m. in 1900

From Hobbs' "Earth Features and Their Meanings," by courtesy of Macmillan & Co.

stone cliffs rise sheer from the ocean on all sides but the S.E., where there is a flat bank of sand called the Unterland. It is $\frac{1}{2}$ sq. m. in area, was much visited for its sea-bathing facilities, and at one time had a pop. of 3,400, mainly Frisian fisher-folk and pilots.

Ceded by Britain to Germany in 1890 in exchange for certain rights on the E. coast of Africa, it thereafter became a strategic point in connexion with the German naval defence. The inhabitants were transferred to the mainland, and the island was strongly fortified. Artificial cliffs were constructed and the area of the island was increased by dredging the Elbe and depositing on Heligoland the material obtained. Enormous gun emplacements were erected, har-

bours were made for war craft, and airship sheds were built. A lighthouse was constructed and furnished with the most powerful light in the world, having a lighting power of 40,000,000 candles, a magnitude of light difficult to realize. There is a cluster of three lights, on the searchlight principle, and the cluster is surmounted by a single light of the same kind and size, that can be

revolved independently and three times as fast as the three lights. The single light is to take the place of the cluster in the event of any accident happening to it.

The peace treaty of Versailles (1919) compelled Germany to dismantle the whole of the fortress of Heligoland, including the removal of all guns and gun emplacements, harbour works and aircraft stations. This was carried out by German labour under the supervision of an inter-allied naval and military mission.

Heligoland, BATTLE OF. Naval engagement between the British and the Germans, Aug. 28, 1914. On the outbreak of war, British submarines were sent to watch German naval movements in the bight of Heligoland, and acting on



Heligoland, as it appeared when the Great War was at its height; the war harbour, which was practically impregnable, full of war vessels



Heligoland. Chart illustrating the British and German tactics in the battle of Aug. 28, 1914

the information they supplied, the British Admiralty determined to carry out a sweep. The original intention was to operate mainly with light cruisers, destroyers, and submarines, supporting them only with the two battle cruisers, *Invincible* and *New Zealand*, against attack by the heavy German ships.

Fortunately Sir John Jellicoe, on learning of this plan, made "urgent representations as to the necessity of supporting the force with battle cruisers" of Sir D. Beatty's battle-cruiser squadron; and on Aug. 27, 1914, on his own responsibility he ordered Sir D. Beatty with the three other available battle cruisers and Commodore Goodenough's 1st light cruiser squadron to take part in the operation. Of this aid most of the other British vessels engaged were not aware, and thus at first they took Beatty's and Goodenough's ships for enemies.

Early in the morning of Aug. 28, Commodore Tyrwhitt with the light cruisers *Arethusa* and *Fearless*, and 33 destroyers, and Commodore R. Keyes with eight submarines, searched the bight, manoeuvring to cut off the German light craft from their bases. The Germans were completely surprised, and it was low water, so that their heavy ships in port could not put to sea. Nine destroyers of the 1st German flotilla were on guard, disposed in a semi-circle about 20 m. from the Elbe mouth, with the light cruisers *Hela*,

Goodenough's light cruisers arrived and attacked further to the west, but had to fall back owing to danger from the British submarines. Observing that the British light craft were apparently unsupported, the Germans made an effort to cut them off. The German light cruisers *Ariadne*, *Frauenlob*, *Strassburg*, *Stralsund*, *Mainz*, and *Cöln* closed on the vessels under the command of Tyrwhitt and Keyes, and the position became so serious that Tyrwhitt signalled by wireless to Beatty that he was hard pressed.

At this moment ships of the 1st British light cruiser squadron re-entered the fight and checked the Germans. Birmingham and Nottingham concentrated a superior fire on *Mainz*, which stopped her attack. At 11 a.m. the battle cruisers *Lion*, *Queen Mary*, *Princess Royal*, *Invincible*, and *New Zealand* avoided a submarine attack (probably British submarines were mistaken for German ones, as all the U-boats in the area of operations are stated by the German official history to have been in port), and, steaming at full speed, sighted *Mainz* at 12.30 and opened fire on her with crushing effect, leaving her helpless and sinking.

A little later *Cöln* was sighted, and shelled till she burst into flame. At this point *Ariadne* intervened, and was left in shattered and sinking condition after two salvos from *Lion*. *Cöln* was sighted a second time and sunk at 1.35 by

Stettin, *Frauenlob*, and *Ariadne* supporting them.

The British broke into the destroyer cordon and engaged *Frauenlob* and Stettin, which came up to the destroyers' aid. The German destroyer V 187 was disabled by the British fire, and had to be sunk by her crew to avoid capture. Two British destroyers were damaged, and *Arethusa* was hit 35 times by *Frauenlob*, with a loss of 12 killed and 20 wounded, before she drove the German cruisers back.

About 8.30 a.m. Commodore

two more salvos from the same ship, the whole of her crew perishing except one stoker. From *Mainz* the British rescued 350 men, 60 of them badly wounded. The Germans saved most of *Ariadne*'s crew. The German loss was thus 3 light cruisers and 1 destroyer, with 712 killed, 149 wounded, and 379 captured. The British casualties were 31 killed and 52 wounded, while *Arethusa* was much damaged but was quickly repaired.

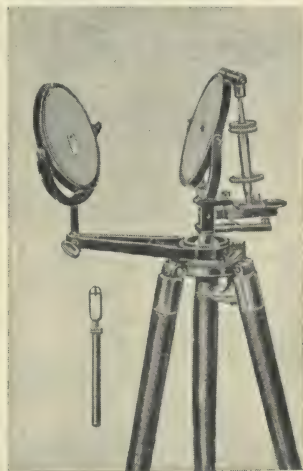
The German official history blames the defensive tactics of the German main fleet for this severe reverse, which, it states, produced a bad moral effect in the German navy; it also criticises the British dispositions. See *Naval Operations* (Official), Sir J. Corbett, Vol. 1, 1920.

H. W. Wilson

Heliodorus. Greek writer of romance. Born at Emesa in Syria, he was the author of *Aethiopia*, a long love-story in ten books, the beginning and the end of which are laid in Ethiopia. Dealing with the adventures of Theagenes and Chariclea, in plot and characterisation it is the best of its kind and commendably free from indecencies. Erroneously attributed to Heliodorus, bishop of Tricca in Thessaly (c. 490), it is probably the work of a sophist who lived at the end of the 3rd century A.D.

Helioabalus. Alternative name of *Elagabalus* (q.v.), Roman emperor.

Heliograph (Gr. *hēlios*, sun; *grapho*, I write). Instrument consisting of a mirror capable of revolution, and so of reflecting the rays of the sun or of some artificial source of light over considerable distances. It is used principally for



Heliograph. Cavalry type with 3-inch mirrors

Courtesy of J. H. Stewara

military signalling, especially in mountainous districts, and its messages are conveyed by long and short flashes in the Morse code.

Heliograph signalling has been carried out at a distance of 70 m., and it has the great advantage of being practically secret and extremely rapid in operation. A heliograph cannot be read by anyone more than a few yards off the exact alignment. *See* Signalling.

Heliometer (Gr. *hēlios*, the sun, and *meter*). Telescopic instrument indispensable for making accurate

merly stood here. Near is New Cairo, a residential suburb connected with Cairo by electric rly.

Helios. In Greek mythology, god of the sun, identified in later times with Apollo, and sometimes called Hyperion. He crossed the sky day by day from east to west in a chariot drawn by four horses. *See* Apollo.

Helioscope. Apparatus commonly affixed to telescopes to enable direct observation of the sun to be made without injury to the eyes. In its simpler forms it consists of smoked lenses or glasses. *See* Telescope.

Heliostat (Gr. *hēlios*, sun; *statos*, fixed). Mirror mounted on an axis parallel to the axis of the earth and moved by clockwork so that it rotates with the same angular velocity as the sun, the image of which it reflects. In short, it follows the sun, and in consequence the rays of the sun when reflected from it pass always in a fixed direction. Foucault's heliostat reflects the sun's rays horizontally. Heliostats are used in spectroscopic work. *See* Spectroscopy.

Heliotrope (*Heliotropium peruvianum*). Perennial plant with shrubby stem, of the natural order Boraginaceae. It is a native of Peru. It has broad lance-shaped,

wrinkled and hairy leaves, and clusters of lilac or dark-blue, salver-shaped flowers, which are strongly but pleasantly scented, whence its name of *cherry-pie*.

Heliotropin. White crystalline substance, with the odour of heliotrope, used as a perfume for soaps and toilet preparations.

Chemically it is the methylene ether of pyrocatechin aldehyde, and it is also known as piperonal. The crystals dissolve in spirit, and it is this solution which is employed as a perfume. Heliotropin is also used in medicine.

Heliotropism (Gr. *hēlios*, sun; *trepein*, to turn). Turning of plants towards the source of light. All plants with green leaves require sunlight for their physiological processes, some more than others, and the whole form of a herb or tree may be altered by its efforts to satisfy its wants. This may be easily seen in the plants on the edge of a thick wood, under a hedgerow, or the pot-plants grown in a window. There is always a bending away from the shade and towards the light.

Helium. Colourless gas with a characteristic spectrum. It was first detected in 1868 by Lockyer in the spectrum of the sun's chromosphere during an eclipse. The spectrum of helium is characterised by five lines, one each in the red, yellow, blue-green, blue, and violet. The particularly brilliant yellow line was the one by which its pre-



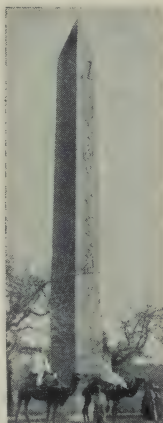
Heliometer at the Radcliffe Observatory, Oxford, for making accurate astronomical measurements

By courtesy of the Clarendon Press

measurements of small distances, e.g. the diameter of a planet, or the distance between the components of a double star. The essential principle of the first heliometers, designed to measure the variation of the sun's diameter at different seasons of the year—hence the name—was that of so employing two symmetric sections of a lens as to produce a double image at the focus.

The first instrument for measurement by double-image was probably due to Savary; Dollond improved on it; and Fraunhofer gave it the modern form. Fraunhofer's heliometers, especially the great Königsberg heliometer (1824–29), are still employed. One of the finest instruments at present in use is at the Cape Observatory. *See* Astronomy; Telescope.

Helipolis (City of the Sun). Town of ancient Egypt, the chief seat of religious learning, formerly containing a famous university for the education of the priests. Called On in the Bible (Gen. xli, 45), it was known to the Egyptians as Annu. Portions of the great temple of the sun still remain, as well as one of the obelisks of red granite, 66 ft. in height. Cleopatra's needle for-



Helipolis, Egypt. Mosque in the New Town. Top right, granite obelisk erected c. 2433 B.C.



Heliotrope. Leaves and flower clusters of the sweet-scented herb

sence in the sun's chromosphere and also in many of the fixed stars was detected.

Helium was not known to occur in terrestrial matter until in 1895 Sir William Ramsay, while searching for argon in certain minerals, e.g. cleveite, obtained the helium spectrum. It was also found in many other minerals, chiefly those which contain uranium such as bröggerite, fergusonite, and monazite. Helium was afterwards detected in the atmosphere in which it exists to the extent of four parts in a million. It is contained in several natural gas supplies, also in many mineral springs.

The density of helium is 1.98, and next to hydrogen it is the lightest gas known. Attempts to produce chemical combinations of helium have failed, and it is there-

fore classed as inert. The remarkable fact has, however, been established that the gas evolved from a solution of radium bromide in water contains helium. Helium for a long time resisted all attempts at liquefaction. Sir James Dewar failed, but in 1908 Onnes of Amsterdam working on methods devised by Dewar succeeded. The boiling-point of this liquid is about 40 above absolute zero, that is about -269°C ., the lowest temperature which has so far been reached. Onnes's investigations show that electrical resistance nearly disappears at that temperature.

Helium is used for filling low-temperature gas thermometers and electric light bulbs, and but for the termination of the Great War it would have been employed by the Allies as a gas filling for airships. The fact that hydrogen, employed as the gas filling for airships, is inflammable, turned attention to helium as a substitute.

It was found that helium mixed with 15 p.c. of hydrogen produced non-inflammable mixture. An investigation was made of the amount of helium contained in natural gases, those of Ontario and Alberta, Canada, being found to be the richest in helium, and it was estimated that from ten to twelve million cubic feet of helium could be obtained annually from them.

An experimental station was set up at Calgary, and a refrigeration process developed of separating helium from natural gas. Claudet's liquid oxygen-producing apparatus being modified for the purpose. By passing the natural gas through the apparatus several times, the quantity of helium was gradually increased in the gaseous portion until a product containing upwards of 97 p.c. of helium was obtained. See Radium.

Helix (Gr., spiral). Genus of land gastropodous molluscs, of which the common snail is a familiar example. All snails of this genus have conical, globular, or depressed shells. The genus includes over 4,000 species, distributed all over the world. See Snail.

Hell. In modern English, place or condition of punishment for impenitent sinners after death or after the final judgement. In the Authorised Version of the Bible it had the wider meaning of the place of the departed. The R.V. has distinguished between Hell and Hades. It should be noticed that the clause in the Apostles' Creed, "He descended into Hell," should be "He descended into Hades" or the realm of departed spirits.

The idea of a place of punishment for the wicked after death is

an obvious corollary of the belief in a future reward for the righteous, and is found in most religions which have developed beyond the primitive stage. In some, however, the belief in retribution takes the form of the idea that the wicked are reborn in a lower grade of life. The word Hell in the Bible is equivalent to Gehenna, which is itself derived from Hinnom, the name of a valley near Jerusalem associated with heathen rites. It became a place where refuse was deposited and constant fires were kept burning. Hence the name was adopted for the place of torment for the wicked. The idea of retribution for the individual after death is not prominent in the O.T. The Apocalyptic writings, of which Daniel is an example, were the first to lay great stress on a final judgement and retribution.

At the time when Jesus began to teach, the belief was widespread. There can be no doubt that Jesus and the N.T. in general teach that impenitent sinners are punished in the future life. Considerable controversy, however, has taken place on the question whether this punishment is eternal. Many theologians, feeling that such a doctrine would contradict the thought of God as a loving Father, maintain that Jesus meant not an eternal punishment but an "age long" punishment. Others interpret literally S. Paul's words, like Drummond in *Natural Law in The Spiritual World*, "the wages of sin is death," and have argued that the fate of sinners who are finally impenitent is annihilation.

The Roman Catholic Church still holds to the doctrine of Hell developed by the medieval church which was greatly influenced by Augustine. According to this even unbaptized infants and virtuous pagans are in Hell. The severity of this view is, however, greatly mitigated by the belief that there are different regions in Hell, that of "Limbo," which is assigned to unbaptized infants, not being a place of torment. Among other Christians the doctrine of Hell has fallen into the background.

This is largely due to a change in our conception of the purpose of punishment. The older view, that retribution is an end in itself, is giving way to the view that the object of punishment should be reform and prevention. For this reason it would be true to say that among many modern Christians the idea of Hell is being transformed into that of a state of further probation and purification, i.e. Purgatory. Whatever modifications the idea of Hell may undergo in the light of

modern thought, the belief in a future punishment of the wicked corresponds to a demand of the conscience and emphasises the vital importance of the struggle against evil. It cannot therefore be safely eliminated from the Christian faith. See Gehenna; Sin; Theology.

Hellanicus (c. 480-405 B.C.). Greek logographer. Like his predecessor Hecataeus (q.v.) a great traveller, he was the author of works on genealogy and chronology, and on the history of various countries, including a brief sketch of political events. The most important were *Attis*, a history of Attica down to the Peloponnesian war, and lists of the priestesses of Hera at Argos and of the victors in the games at the Spartan festival Carnea, both valuable for chronology.

Hellas. Originally a small district of Thessaly inhabited by Hellenes, the supposed descendants of the legendary king Hellen, son of Deucalion. The name afterwards came to be applied by the Greeks to all places inhabited by those of their race. Hellas thus included not only Greece proper, but the Greek cities of Asia Minor and Sicily, and even distant colonies such as Massilia (Marseilles), and those on the Pontus Euxinus. See Greece.

Hellebore (*Helleborus*). Genus of perennial herbs of the natural order Ranunculaceae. They are natives of Europe and N. and W. Asia. They have large leaves deeply cut into lobes which are arranged finger-fashion. The showy



Hellebore. Foliage and flowers of *Helleborus foetidus*

parts of the flowers are the sepals, which are coloured, whilst the petals are converted into small nectar-tubes. Owing to their cathartic and narcotic properties they were formerly used in medicine. *H. niger* is the so-called Christmas-rose; *H. foetidus*, stinking hellebore or setterwort; and *H. viridis*, the bear's-foot. See Fruit.

Hellen (Gr. *Hellen*). In Greek legend, the founder of the Greek race (Hellenes). He was king of Phthia in Thessaly, and was the son of Deucalion and Pyrrha.



Helmet. Types of ancient Greek helmets. A, is a Syrian helmet, a probable adaptation from the Greek

Hellenic Studies, SOCIETY FOR THE PROMOTION OF. Society founded in 1879 by a number of scholars interested in the subject. Its object is to promote the study of everything connected with the language, literature, and art of ancient and modern Greece, particularly the results of modern research and excavations. The *Journal of Hellenic Studies*, issued by the society, contains an account of the researches and matters of interest concerning Greek life. Its offices are at 19, Bloomsbury Square, London, W.C.

Hellenism. Term applied to the school of culture which sought models of artistic expression in the art of ancient Greece. Its chief characteristics in the best period, both in art proper and in literature, were restraint, and a sense of proportion and harmony. See *Classical Education*; *Greek Art*; *Greek Language and Literature*.

Hellenist (Gr. *hellenistēs*). Term meaning literally one who speaks or writes pure Greek, then one who affects the use of Greek manners, modes of thought, or language. It was specially applied to those Jews who adopted Greek as their language, and afterwards to any non-Greek who did the same. See *Greek Language and Literature*.

Heller. Austrian coin. Its value is 1-100th part of a krone, and it is thus the equivalent representative of the centime. Normally it is coined in bronze as one and two heller pieces, and in nickel as 10 and 20 heller pieces. The conditions after the Great War forced an almost entirely paper currency on Austria, and notes of 20 heller value were issued.

Heller, STEPHEN (1815-88). Hungarian pianist and composer. Born at Pest, May 15, 1815, he studied music in Vienna, and early developed great powers as a pianist. He composed many short pieces for the piano, as well as some excellent studies, and was a most successful teacher. He died in Paris, Jan. 14, 1888.



Stephen Heller, Hungarian pianist

Helles, CAPE, OR HELLES BURN. Promontory at the S. extremity of the peninsula of Gallipoli, near the entrance to the Dardanelles. The beaches adjacent were utilised as landing places for troops at the beginning of the Gallipoli cam-

paign in 1915. There is a lighthouse on the point. See *Gallipoli Campaign* in.

Hellespont (mod. Dardanelles). In ancient geography, strait separating the Thracian Chersonese from Asia. It was supposed to have derived its Greek name Hellespontos (sea of Hellē) from Hellē, daughter of Athamas, who in her flight from her stepmother, Ino, on the ram with the golden fleece, fell into the sea and was drowned. Its width varies from 6 m. to less than 1 m., its narrowest part being between Sestos and Abydos (*q.v.*). Hellespontos was also the name of a province, consisting of N. Mysia, in the reign of Diocletian. See *Dardanelles*; *Leander*.

Hellen, PAUL CÉSAR (b. 1859). French painter and etcher. Born at Vannes, he began by painting old churches and landscapes. A Study of Versailles is in the Luxembourg. Later he turned to portraits in dry-point of fashionable women; one may cite those of the duchess of Marlborough, the countess of Warwick, and the duchesse de Noailles. Delicate and graceful, these tinted etchings aroused much attention at the International Society's exhibitions and elsewhere.

Hellevoetsluis. Seaport and fortress of Holland. It lies in the prov. of S. Holland, on the S. coast of the island of Vooorne, on the Haringvliet, an arm of the Ems estuary, about 18 m. S.W. of Rotterdam, with which it is connected by steam tramway, and also by the Vooorne canal. It is an important base of the Dutch navy, with extensive docks, arsenals, engineering shops, etc., but the town has little interest. Pop. 4,500.

Hell Fire Corner. Landmark on the Ypres-Menin road, 1 m. from Ypres, prominent in the Great War. It was so called because the British troops going up to the advanced trenches from Ypres were continually shelled by the Germans at this spot.

Hell Gate. Difficult channel in the East River, New York. It is the waterway separating New York proper from Long Island. Strong tides running between Blackwell's and Ward's Islands, and reefs and shoals, caused many wrecks; the obstructions were blown away with nitroglycerine after a series of engineering operations carried on 1876-85. The

East River is now crossed from Long Island to the mainland by way of Ward's and Randall Islands by the bridge of the New York Connecting Railroad. This is an important link in the development of New York Harbour, enabling goods to be moved by rail between the S. Brooklyn docks and the mainland without transshipment.

The main bridge and its approaches is $3\frac{1}{2}$ m. long, and its centre span is 1,017 ft., 135 ft. above high water. Granite, masonry, and concrete towers, 200 ft. high, hold up the arch, and the foundation of one of them is supported under water on a concrete arch and a concrete cantilever. *See* New York.

Hellin. Town of Spain, in the prov. of Albacete. It stands near the river Mundo, on the Murcia-Albacete rly., 34 m. S.S.E. of Albacete. It has ruins of a Roman fort, and a church noted for its fine vaulting and marble pavement. It manufactures woollen and leather goods, pottery, etc., and trades in wine, oil, and saffron. At Minas del Mundo, 12 m. S., are famous sulphur mines (now state

property), once worked by the Romans, and in the vicinity, at Azaraque, are mineral springs. Pop. 17,800.

Helluland. Name given by the Norse voyagers of the 11th century to a district in N. America visited by them. It means the land of flat stones. Various opinions have been expressed by scholars as to its exact whereabouts, but it was probably Newfoundland.

Helm. Apparatus by which a vessel is steered, comprising the rudder, tiller, wheel, etc. The term is often used for the wheel or tiller alone. *See* Navigation.

Helmand. River of Afghanistan. It rises in the Hindu Kush, some 140 m. W. of Kabul. After a course of about 700 m., it falls, by several mouths, into Lake Helmet, in S.W. Afghanistan.

Helmet. Defence for the head in fighting. The helmet of the Greeks was usually open in front, though some examples show a fixed plate pierced for eyes and nose which by tilting the whole helmet forward could be brought into position, but this was at best a cumbersome contrivance. The Greeks



Helmet. 1. Closed, German, c. 1540. 2. Visored Basinet, French, c. 1400. 3. Closed, German, 1540-50. 4. Venetian Salade, c. 1450. 5. Salade, Milanese, c. 1430. 6. Closed, German, c. 1450. 7. Tilting Salade, German, 1450-90. 8. Side view of tilting helm, English c. 1515; and 11, front view of same. 9. Closed, German, c. 1570. 10. Types of helmets used in the Great War, adapted from antique armour; back row, left to right: Portuguese, American, British, Belgian, French, with Polack visor, French, 1916 pattern; front row: German, German sniper's mask, Austrian

Photographs from Wallace Collection and Imperial War Museum

favoured a high crest of horsehair, but the Romans, while adopting the general lines of the Greek head-piece, were content with a much smaller crest, frequently a mere button or knob. Assyrian, Egyptian, and Etruscan helmets were planned on the same general principles though differing in design, and, like the Greek, were frequently ornamented with rich decoration.

After the fall of the Roman Empire, the helmets of Central Europe were cruder in manufacture, frequently mere caps of toughened leather, or of plates of bronze or iron riveted to a ring. The pointed helmet of the Normans was of this nature, but it was generally provided with a strong nasal or nose guard, of large proportions, attached to the base of the ring. From this time onwards the design of the helmet progressed; sometimes it was a small, close cap of steel, and sometimes a broad-brimmed defence. In the 14th century the popular type was known as the *bascinet*, a light, pointed helmet, sometimes with a visor pivoted to the sides, and generally attached to the camil or coif of mail by staples and laces. In the 15th century we find the *salade* commonly in use. This was a helmet very similar in design to the modern *sou'-wester*, with fixed or pivoted visor, and with an adjustable beaver, or chin piece. From this latter was evolved the *arnet* or close helmet, which completely encased the head, and had two movable pieces to cover the eyes and mouth respectively. From this again was evolved a simpler form, called the *burgonet*.

At the end of the century, when full armour was being discarded, the morion and cabasset, light, open helmets, came into favour. In the 18th century, a helmet based somewhat on the Greek form was adopted for heavy cavalry by most European armies, and this in turn gave place to the graceless helmets of the dragoons and household cavalry worn only for ceremonial parade. The modern shrapnel helmet is based upon the *chapel de fer* of the 15th century, the French *casque* on a compromise between the morion and cabasset, while the German helmet is almost a copy of a variety of the *salade*. The great helm of the 13th century was of barrel form, heavy and cumbersome, with a flat top which was entirely unpractical as providing no glancing surface to the opposing weapon. At the end of the century we find the more practical sugar loaf helm.

In the 14th century the helm has a rounded top with a projecting

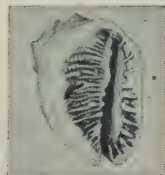
face-plate and a narrow ocularium or vision slit. In jousting helms this slit was so placed that the wearer could only see out of it when he was bent forward with lance in rest ready for his course. The helms of the 15th and 16th centuries were bolted to the cuirass back and front, and presented a smooth surface to the attacking weapon.

In heraldry the first type of helm employed was cylindrical, with square or flat top; then came the round. In early art the helmet was always represented as disproportionately large as compared with the shield, and was placed differently full face or in profile. Gradually rules were introduced, the open visored helmet being reserved for princes and nobles and the closed for lesser folk. Modern practice enjoins that the sovereign and princes of the blood should have a helm of gold, with seven-barred visor (*grilles*) placed full face, or *affrontée*.

A peer has a silver helmet, with five golden bars, in profile to dexter; baronets and knights a steel helmet, represented in painting by light blue or grey, full faced, with open visor; esquires and gentlemen of coat armour, a steel helmet in profile, with closed visor. No woman, except a sovereign, is entitled to the helmet. See *Armour*; *Casque*; *Celt*; *Crest*.

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Helmet Shell. Popular name for the shells of the genus *Cassia*, which includes numerous marine gasteropodous molluscs found in the tropical seas. The shells are massive and ventricose, with a narrow aperture. There are about 50 species, many of which attain a large size and are handsomely coloured. From these shells the best shell cameos are cut.



Helmet Shell. Specimen of *Cassia Madagascarensis* is handsomely coloured. From these shells the best shell cameos are cut.

Helmholtz, HERMAN LUDWIG FERDINAND VON (1821-94). German physicist. Born at Potsdam, Aug. 31, 1821. Helmholtz was a descendant of the Quaker William Penn. He made a study of medicine, and from 1843-47 served as a surgeon in the Prussian army. He held the chair of physiology at Königsberg, Bonn, and Heidelberg universities, 1849-71, and in

the latter year became professor of physics at the university of Berlin. His most important post



H. von Helmholtz,
German physicist

was that of director of the Physico-technical Institution of Charlottenberg, to which he was appointed in 1887.

Helmholtz was responsible for many advances in the study of the eye and the nervous system. The invention of the ophthalmoscope is due to him, one of the most remarkable of all instruments used by the oculist. In 1856-66 was published his work *Physiological Optics*, one of the greatest advances in the theory of vision, etc., of the 19th century. His work on hearing, entitled *Sensations of Tone*, published in 1863, holds a corresponding position in acoustics.

The great physicist was one of the founders with Lord Kelvin of the theory of the conservation of energy; to him is due the theory of colour depending on the three fundamental sensations of red, green, and blue or violet; the study of the electromagnetic theory of light; of vortex motion; and the problems of electro-dynamics. He died at Charlottenberg, Sept. 8, 1894. Consult *Life*, L. Königsberger, Eng. trans. F. A. Welby, 1906; H. L. F. von Helmholtz, J. McKendrick, 1899.

Helmond. Town of Holland. It stands on the Aa, in the province of N. Brabant, 28 m. from Hertogenbosch. The chief building is the castle, finished about 1400. There is also a fine church dedicated to S. Lambert, and a town hall. The town is served by railway, canal, and tramway, and its industries are chiefly connected with the making of cotton and silk goods. There are also engineering works, and those for making soap, tobacco, and beer. Pop. 14,800.

Helmolt, JEAN BAPTISTE VAN (1577-1644). Belgian alchemist. Born at Brussels and educated at Louvain, his outstanding discovery was carbonic acid gas, which he named *gas sylvestre*. This was rediscovered by Black in the 18th century, and called fixed air. He died at Vilvorde, Dec. 30, 1644. See *Alchemy*.

Helmstedt. Town of Germany, in Brunswick. It lies 29 m. E.N.E. of Magdeburg. It was once famous for its university, which was founded in 1576 and suppressed in 1809. The old building of the university is in the Renaissance style,

dating from 1592, and has a tower 164 ft. high. The abbey of S. Ludgerus, founded in the 9th century, and now put to secular use, recalls the fact that the first Saxons were baptized here by the saint. The abbey church, originally built in the 12th century, shows a few traces of the old construction. S. Stephen's Church, dating from the 13th century, contains some fine tombs and carved work. There are also several good examples of 16th century domestic architecture. Helmstedt, which was once a member of the Hanseatic League, has manufactures of agricultural machinery, earthenware, soap, tobacco, etc. Pop. 16,420.

Helm Wind. Steady wind which causes a stationary helmet-shaped cloud to overhang a mountain peak. When a damp wind is forced to ascend an obstacle, such as a mountain ridge, the resultant cooling causes a constant condensation of water-vapour on the windward side and leads to the formation of clouds. On the leeward side the water particles forming the clouds are constantly evaporated, the total effect being that cloud is continuously visible shrouding the summit. This phenomenon is well known in the English Lake District, and occurs in mountainous districts subjected to steady damp winds.

Heloderm (Gr. *hēlos*, nail; *derma*, skin). Venomous lizards, the only ones known to science. There are two species, found in Central America, Mexico, and Arizona. See Gila Monster.

Héloise (c. 1101-64). French abbess, famous for her early relations with her tutor Abélard (*q.v.*).

Helots (Gr. *heilōtes*). Lowest section of the community in Sparta. The descendants of a pre-Dorian population, their position was analogous to that of the medieval villein in England and of the Russian serf before his emancipation, though they belonged to the state, and not to any individuals, and could not be removed from the land. The ruling class of Spartans employed them to cultivate their farms, and they had to hand over a fixed quantity of the produce of the farm each year, being allowed to keep any surplus. Their lot was very hard, and they were often treated with great cruelty, though by good service and conduct it was possible for them to obtain freedom.

In time of war they served as light-armed infantry, and sometimes as oarsmen. The helots, as a class, cherished a most bitter hatred of their Spartan rulers, and in 464 B.C. there was an actual revolt, which was only suppressed with great difficulty. A special



Helsingfors, Finland. Panorama of the city and harbour

band of young Spartans, the Crypteia or secret police, was charged with the duty of watching the Helot population, and any individual who seemed likely to cause trouble was put out of the way.

Helpmakaar. Village of Natal, S. Africa. It is 25 m. S. of Dundee, and about 10 m. to the N.E. is Rorke's Drift on the Buffalo river, noted for the heroic defence put up by a small party of British against Zulu hordes in 1879, after the defeat at Isandhlwana. There is a regular motor service to Dundee.

Helps, SIR ARTHUR (1813-75). British essayist and historian. Born at Streatham, July 10, 1813, and educated at Eton and Trinity College, Cambridge, in 1860 he became clerk to the privy council, a post which he held until his death. In this capacity he came much into contact with

Sir Arthur Helps,
British essayist
After Williams

Queen Victoria, and at her request edited Prince Albert's Speeches and Addresses, and Leaves from a Journal of Our Life in the Highlands.

Among his original works are *Thoughts in the Cloister and the Crowd*, 1835; *The Claims of Labour*, 1844; *Friends in Council*, 1847-59; *Conquerors of the New World and their Bondsmen*, 1848-52; *The Spanish Conquest in America*, 1855-61; biographies of Columbus, Cortes, and Pizarro; *Thoughts upon Government*, 1872; the tragedies *Catherine Douglas* and *Henry II*, both 1843; and a novel, *Realmah*, 1868. Helps was an earnest and thoughtful writer, and his literary

style won the praise of Ruskin. He was made K.C.B. in 1872, and died in London, March 7, 1875.

Helsingborg OR HÄLSINGBORG. City and seaport of Sweden, in the län or govt. of Kristianstad. It stands at the narrowest part of the Sound, opposite Elsinore (2½ m.) in Denmark, 33 m. N. of Malmö. It has remains of a castle and a fort, mentioned in the 12th century, mineral springs and sea baths. The artificial harbour is being extended. The exports are timber, iron ore, and cattle; the imports coal, fertilisers, wheat, tobacco, and sugar.

A thriving manufacturing town, Helsingborg has copper and rubber works, breweries, etc. Long occupied by Denmark, it was often besieged, becoming Swedish in 1710, when Stenbock here defeated the Danes. In the vicinity is the only coalfield in Sweden. Pop. 45,330.

Helsingfors (Finnish *Helsinki*). Capital of Finland. It stands on the Gulf of Finland, 250 m. by rly.

W. of Petrograd, is the seat of the national diet, and has an observatory, botanical garden, and other institutions. The university, founded at Abo in 1640, was moved



Helsingfors
arms



Helsingfors. Plan of the Finnish capital, showing its principal public buildings

to the capital in 1827 when Abo was burned down. The port consists of three harbours and a roadstead with a good anchorage. Considerable export trade is carried on with Petrograd, Sweden, and England, in timber, paper, cellulose, and butter; the chief industries are sugar-refining, brewing, machinery and carpet making, distilling and tobacco-dressing.

Helsingfors is protected by the island defences. The coast rly. goes W. to Hango and Abo, and a second line runs N. to connect with the line from Vasa round the region of the lakes to Viborg and Petrograd. Founded by Gustavus I about 5 m. to the N.E. in 1550, it was removed by Queen Christina in 1642; taken by the Russians in 1808, it later became the capital of the grand duchy, and of the republic. Pop., with Sveaborg, 187,544. See Finland.

Helsingör. Alternative name for the Danish port better known as Elsinore (*q.v.*).

Helst, BARTHOLOMAEUS VAN DER (c. 1613-70). Dutch painter. Born at Haarlem, he studied probably under Frans Hals, whose style he followed. He lived chiefly at Amsterdam, where he helped to found the painters' guild. There are many portraits and groups by him in the Rijks Museum, and others at The Hague, Rotterdam, etc. His pictures are solidly painted, but a little lifeless in colour. He died at Amsterdam.

Helston. Mun. bor. and market town of Cornwall, England. It

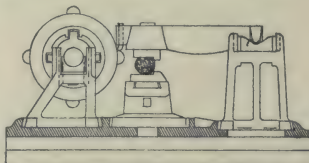


Helston, Cornwall. View looking down Coinage Hall Street

stands on the Caber, 10 m. W.S.W. of Falmouth on the G.W. Rly. There is an old church dedicated to S. Michael, and a town hall. Helston is noted for the annual celebration on May 8 of a festival known as the Furry or Flora Dance. It was one of the stannary towns, and tin and copper were extensively worked. To-day the industries include milling and tanning. Near the town is Looe Pool, into which legend says the sword Excalibur was thrown. Helston

is a good centre for visiting the Lizard. An important place before the Norman Conquest, King John made Helston a borough. The citizens were allowed to hold markets and fairs, and in the Middle Ages obtained other valuable privileges. It retains its mayor and corporation. Market days, Wed. and Sat. Pop. 3,000. See Flora Day.

Helve. Powerful form of hammer at one time extensively used for the "shingling" of iron blooms.



Helve. Hammer formerly used in iron-working

This is an operation by which the spongy mass of iron is consolidated and any liquid slag it contains squeezed out. In its usual form the helve consisted of a horizontal beam having at one end a double "knife edge" forming a fulcrum on which it could oscillate, and at the other a massive head removable for repair or renewal, a fulcrum stand, an anvil, and a cam wheel.

The latter was, in the old days, usually driven by a water wheel, and in revolving lifted the hammer end of the beam a certain distance and then released it so that the hammer fell on the mass of iron on the anvil. The hammer blow would represent sometimes a weight of 10

tons falling 18 ins., the rate of striking being 60 blows a minute. See Steam Hammer.

Helvella. Genus of fungi of the natural order Ascomycetes. They are all edible, the best known being the white helvella (*H. crispa*) with ribbed, hollow and inflated stem, and a thin cap broken into lobes which

are folded and wrinkled. In the black helvella (*H. lacunosa*) the head is more inflated, less wrinkled, and entirely of a sooty colouring.

Helvellyn. Mountain of the Lake District of England. It is on the borders of Cumberland and Westmorland overlooking Ulleswater. Its height is 3,118 ft., being exceeded only by Scafell Pikes. It is best ascended from Patterdale, the way passing along Striding Edge, but there are other ascents. See Lake District.

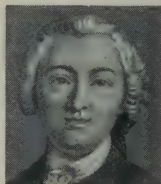
Helvetic Republic. Government set up by the French directory in Switzerland. The republic was proclaimed on Mar. 29, 1798, as the "Helvetic republic, one and indivisible," a central government, consisting of a senate and great council, for the Swiss cantons being set up at Lucerne. The constitution of the republic was a great step forward in combining the various districts of Switzerland, but quarrels arose and the constitution was abolished by Napoleon, Feb., 1803.

Helvetii. Ancient people inhabiting the western portion of what is now Switzerland. Their chief town was Aventicum (mod. Avenches). They first come into history as allies of the Cimbri and Teutones when those nations attempted to invade Italy at the end of the 2nd century B.C. In 58 B.C., under pressure from the German tribes, they invaded Gaul, but were driven back by Caesar.

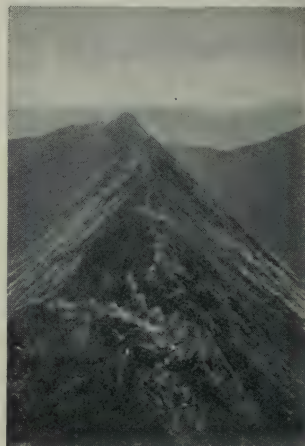
Helvétius, CLAUDE ADRIEN (1715-71). French philosopher.

Born in Paris and for 12 years farmer-general of taxes (1738-51), he amassed a large fortune.

He spent the rest of his life on his estate near Paris, devoting himself to charitable works and philosophical study. He died Dec. 26, 1771. One of the chief representatives of the French Illuminati (*q.v.*), and intimate with the Encyclopédistes (*q.v.*), Helvétius was a hedonist and utilitarian. His book *De l'Esprit* (On the Mind) was banned and publicly burnt. A!



Claude A. Helvétius, French philosopher



Helvellyn, showing Striding Edge, one of the paths of ascent

intelligences are born equal, differences being the result of education. Man is a hedonistic creature, whose only object is to secure pleasure and avoid pain; personal interest is the motive of all his actions. Virtue and vice are relative terms; really virtuous actions are such as promote the general welfare. *Prom. El-vay-si-uee.*

Hely-Hutchinson, JOHN (1724-94). Irish politician. The son of Francis Hely, a landowner in Cork, he was educated at Trinity College, Dublin, and became a barrister. In 1751 he married an heiress, and took the additional name of Hutchinson. In 1759 he entered the Irish House of Commons as M.P. for Lanesborough, and retained a seat there as representative of three successive constituencies until his death. The gift that had brought him success as an advocate distinguished him in the political arena, and in 1777 he was made a secretary of state. He was also provost of Trinity College, Dublin. He died Sept. 4, 1794.

Although rapacious for office and emoluments, Hely-Hutchinson was liberal enough to advocate relief to Roman Catholics, including their admission to Trinity College, parliamentary reform, and free trade; a policy he preached in his *Commercial Restraints of Ireland*. In 1795 his widow was created Baroness Donoughmore, and the present earl of Donoughmore is his descendant.

Hemans, FELICIA DOROTHEA (1793-1835). English poet. Born at Liverpool, Sept. 25, 1793, she was the daughter of George Browne, a merchant in that city. In 1812 she married Captain Alfred Hemans, but they separated four years later.

As a child Mrs. Hemans had shown much precocity, and a volume of her poems was published when she was 14. Her chief works are *The Siege of Valencia*, 1823, an unacted play; *Lays of Many Lands*, 1825; *The Forest Sanctuary*, 1825; her own favourite *Songs of the Affections*, 1830; *Hymns for Childhood*, 1834.

Though without depth, her poems are full of grace, and permeated with a love for the noble and chivalrous. In her own lifetime they enjoyed great vogue, both in Britain and in America, but only one or two of her lyrics, such as *The Better Land* and *The*

Homes of England, have stood the test of time. Mrs. Hemans died in Dublin, May 16, 1835. A complete edition of her works with a memoir by her sister was issued in 1839.

Hemel Hempstead. Mun. bor., parish, and mkt. town of Hertfordshire, England. The old town, which derives its name from adjacent hemp land, is on the river Gade, 24 m. N.W. of London, and near the Grand Junction Canal, with a station on the M.R. branch line from Harpenden. In the High Street are fine houses and some old inns, with Gade-bridge Park on the W. The name is also given to a rural district, which includes Marlowes and Heath Park, and stretches 1½ m. to Boxmoor, Two Waters, and Apsley End.

A service of motor 'buses connects the district with Boxmoor station on the L. & N.W.R. Above Boxmoor, which is in the parish, and where a Roman villa has been brought to light, is a growing residential area, on the Feldon estate, with golf links. The ancient church of S. Mary, partly rebuilt in 1846 and restored in 1863, has 14th and 15th century roofing and interesting monuments. The town hall, corn exchange, and literary institute are in one building, 1851-68. The Market House was built in 1888.

The old building known as the Bury once belonged to a monastery at Ashridge. The industries include paper-making, apron, blouse, and brush-making, ironfounding, brewing, tanning, and strawplaiting; there is a trade in timber. Mentioned in Domesday, it gives its name to a co. div. returning one member to Parliament. Market day, Thurs. Pop. 13,832.

Hemichorda. Term used in zoology for a group of worm-like animals, the principal genus of which is *Balanoglossus*. The term was used by W. Bates to indicate those particular invertebrates from which vertebrates are supposed to have been derived. They possess certain characters of vertebrates, e.g. breathing organs resembling the gill slits and a modified form of notochord, but the connexion suggested between the two groups has yet to be definitely proved.

Hemimorphite. Important ore of zinc, containing over 50 p.c. of the metal. A hydrous zinc silicate, it

is remarkable for its form of crystallisation and for the electric character of the crystals with variation of temperature, which causes positive electrification at one end of the crystals and negative at the other. The crystals are colourless or slightly yellow, blue, red, brown, or green, and on account of their electric property the ore has been called electric calamine, an ore of zinc with which it is sometimes confused. It is found with other zinc ores in Carinthia, Westphalia, near



Hemel Hempstead, Hertfordshire. The market place and parish church of S. Mary

Valentine

Aix-la-Chapelle, and in parts of England and the U.S.A. See Zinc.

Heming OR HEMMINGE, JOHN (c. 1556-1630). English actor. Born at Shottery, he became a member of the lord chamberlain's or king's company, and held shares in the Globe and Blackfriars theatres. His work as player cannot be definitely ascertained; but he seems to have appeared in *King Henry IV*, part I, possibly as Falstaff, and in several plays of Ben Jonson, including *Every Man in His Humour*, *Every Man Out of His Humour*, *Sejanus*, *Volpone*, and *The Alchemist*.

He was associated with Shakespeare, who left him 26s. 8d. for the purchase of a ring. With his fellow-actor Condell, he published in 1623 in a single folio volume the first collected edition of Shakespeare's works. He died at Aldermanbury, Oct. 10, 1630.

Hemiplegia (Gr. *hēmi*, half; *plēgē*, blow, stroke). Paralysis of one side of the body, most often due to apoplexy or haemorrhage in the brain. See Paralysis.

Hemiptera (Gr. *hēmi*, half; *ptera*, wings). Name applied to an order of insects otherwise known as Rhynchota or beaked insects. These include the bugs, plant lice, water scorpions, lice, and others. They vary greatly in size and form, some being very beautiful and others the reverse. In all of them the mouth parts are modified to



After W. E. West

form a rostrum or beak which is used for piercing and sucking; none of them passes through a quiescent pupal stage. As a general rule they have four wings, the fore ones more or less horny. See Insect.

Hemisphere (Gr. *hēmi*, half; *sphaira*, a globe). Half of the globe. All great circles divide the world into hemispheres, but maps in common use only depict hemispheres in two ways. The equator divides the world into the N. and S. hemispheres. The world is also divided into the E. and W. hemispheres, the latter containing N. and S. America, the former the other continents. The great circle made of the meridians 20° W. and 160° E. is usually taken as the boundary line between these hemispheres. See Earth; Equator.

Hemlock (*Conium maculatum*). Biennial herb of the natural order Umbelliferae. A native of Europe, N. Africa, N. and W. Asia, it has a stout, furrowed stem, spotted with purple, and is 2 ft. to 4 ft. high.



Hemlock. Flowers of the poisonous umbelliferous plant

The leaves are wedge-shaped, finely divided, fern-like; flowers small, white, in compound umbels. All parts of the plant, but especially the fruits, contain an oily, poisonous fluid, the active principle of which is alkaloid conine.

Cases of poisoning by conium have occurred from mistaking the leaves for parsley. The symptoms are weakness and paralysis of the muscles, the lower limbs being first affected, and the action of the poison gradually extending upwards. Eventually paralysis of respiration occurs, and death ensues from asphyxia. This sequence of events is described in the well-known account of the death of Socrates, who was condemned to drink hemlock. The treatment is to wash out the stomach, administer stimulants, and perform artificial respiration if necessary.

Hemlock Spruce (*Tsuga canadensis*). Evergreen tree of the natural order Coniferae. A native



Hemlock Spruce. Leaves and cones of this N. American evergreen tree

of N.E. America, it attains a height of 60 ft. to 80 ft. The short narrow leaves are green above and white beneath, solitary, in two irregular ranks; the cones small and oval, hanging down from the tips of the branches, with semicircular scales. It is a timber tree, and the bark is used for tanning.

Hemp. Commercially, a general name for textile fibres produced by a number of unrelated plants, but originally restricted to those obtained from the annual herb hemp. (See Cannabis.) African bow-string hemp is yielded by *Sansevieria guineensis*; Indian bow-string hemp by *Calotropis gigantea*; Bengal, Bombay, Madras, Brown, and Sunn hems by *Crotalaria juncea*; Jubbulpore hemp by *Crotalaria tenuifolia*; Indian hemp by *Apocynum cannabinum*; brown Indian hemp by *Hibiscus cannabinus*; Manila hemp by *Musa textilis*; and Sisal hemp by *Agave sisalana*.

True hemp (*Cannabis sativa*) is little grown in the U.K.; before the Great War the British imports of its fibres were valued at 3 or 4 million £ per year. It was widely cultivated in Russia and Poland, but the best quality came from Italy. Most of this is used in the production of strong ropes and twines, and woven into wear-resisting wrappers, conveyer belts, sail-cloth, and fire-hose. Before the introduction of the cheaper jute (*Corchorus*) early in the 19th cent., hemp was used largely for making sacks, canvas, etc. Hemp is used as a drug or intoxicant under the names of bhang, ganja, and charas. Hashish is the Arabic name given to a preparation of the leaves. The plant has valuable medicinal properties, and has been widely used in the East.

To discourage branching and produce the maximum length of fibre, the plants are grown, like timber and corn, in close rows. When the ripe stems are pulled they are made into bundles and subjected to processes of retting,

bleaching, and scutching, such as are applied to flax (*q.v.*). Hemp grows best in cool climates, and prefers a moist, rich, well-drained loam. Where both seed and fibre are required, from 2 to 2½ bushels of seed are drilled to the acre, which yields from 20 to 25 bushels of seed and 2 to 3 tons of stems equal to 6 to 8 cwt. of fibre. Male plants are pulled as soon as the flowers wither, but the females are left, of course, until the seeds are ripe. The name, in A.S. *henep*, is connected with Gr. and Lat. *cannabis*. See Cannabis; Rope.

Hemp Agrimony OR BLACK ELDER (*Eupatorium cannabinum*). Perennial herb of the natural order Compositae. It is a native of Europe, N. Africa, and N. and W. Asia.



Hemp Agrimony. Leaves and flowers of the perennial herb

It has a branching stem about 4 ft. high, and the leaves are divided into three or five lance-shaped toothed leaflets. It is one of the simplest of the Composite flowers, each head consisting of five or six pale purple florets, but the heads are gathered into large clusters. The florets are all tubular. A reputedly tonic decoction is made of the leaves.

Hemp Nettle (*Galeopsis tetrahit*). Annual herb of the natural order Labiatae. It is a native of Europe and N. and W. Asia. It has a bristly stem, with swollen



Hemp Nettle. Foliage and flowers of the annual herb

joints, and oval-lance-shaped leaves with coarsely toothed edges. The rosy or white flowers are in whorls just above the pairs of leaves. *G. speciosa*, by some regarded as a form of *G. tetrahit*, has larger yellow flowers blotched with purple.

Hemsworth. Parish and village of Yorkshire (W R.), England. It is 8 m. S.E. of Wakefield on the G.N. and G.C. joint railway. Stone quarrying and mining are the chief industries. There is an old church dedicated to S. Helen, while the hospital and the free grammar school were both founded by Robert Holgate, archbishop of York, in the 16th century. Hemsworth Hall was the seat of Sir Charles Wood, afterwards Viscount Halifax. It gives its name to a co. division returning one member to Parliament. Pop. 10,000.

Henbane (*Hyoscyamus niger*). Biennial herb of the natural order Solanaceae. It is a native of



Henbane, a medicinal herb

Europe, N. Africa, and N. and W. Asia. The leaves are oval, lobed or toothed, the upper ones clasping the stem; the flowers are large, funnel-shaped, and dull yellow, veined with purple. The fruit is a many-sided capsule with a distinct lid. The dried leaves are used in medicine. The active principles are poisonous alkaloids called hyoscyamine and hyoscyne. Preparations of hyoscyamus are used chiefly with purgatives to diminish griping. They are also given to relieve spasms of the bladder associated with cystitis or inflammation of the prostate gland. Hyoscyne is sometimes known as scopolamine, and is occasionally employed as a sedative in acute mania. In conjunction with morphine it has been used in recent years to diminish the pains of labour, producing the condition popularly known as twilight sleep. For this purpose the drug should only be used by skilled hands, and the patient should be continuously under observation. See Corolla.

Henderson. City of Kentucky, U.S.A., the co. seat of Henderson co. It stands on the Ohio river, 74 m. N. of Hopkinsville, on the Louisville and Nashville and other rlys. A massive steel bridge spans the Ohio, and the city's buildings include a public library, a high school,

and a sanatorium. Atkinson Park is a fine open space of nearly 100 acres. Henderson is a busy river port, shipping corn, wheat, tobacco, and fruit, and has cotton and woolen mills, tobacco, furniture, and box factories, saw-mills, grain elevators and wagon works, and coal mines. First incorporated in 1797, it now has a mayor and council. Pop. 12,312.

Henderson, ALEXANDER (1583-1646). Scottish divine. Born at Crieich, Fifeshire. He was educated at St. Andrews, where he became professor of rhetoric and philosophy. He was appointed to the incumbency of Leuchars, but soon afterwards became a Presbyterian, and strongly



Alex. Henderson, Scottish divine
From an engraving

opposed the attempt to introduce a liturgy. In 1638 he was moderator to the general assembly, and in 1639 minister of High Kirk, Edinburgh. In 1641 he was made chaplain to Charles I in Scotland. He drafted the Solemn League and Covenant, and is regarded, after Knox, as the founder of the Reformed Church of Scotland. He died at Edinburgh, Aug. 16, 1646.

Henderson, ARTHUR (b. 1863) British politician. Born in Glasgow, he was apprenticed as a moulder in the works of Robert Stephenson & Co., at Newcastle. Here he came in touch with the trade union movement, and was soon made an official of his society. As a labour member he was elected to the city council of Newcastle, and later to that of Darlington, of which town he was mayor in 1903. Having left his engineering work, he devoted all his time to his duties as a trade union official. In 1895 his name had been put forward as a candidate for Newcastle, but it was not until 1903 that he secured a seat at Barnard Castle by-election. In 1908 he was chosen chairman of the parliamentary labour party, a post he filled between 1914-17.

In May, 1915, Henderson joined the Coalition ministry, taking the post of president of the board of education, and in Dec., 1916, he entered Lloyd George's minis-

try as Labour's representative, being minister without portfolio. In 1917 he visited Russia, and on his return differences of opinion arose between him and Lloyd George, mainly over the question of attendance at the international Socialist conference at Stockholm, the result being Henderson's resignation in August. Throughout this period he had retained his post as secretary of the Labour Party, and the clash between the two positions was really the cause of the trouble. In 1915 he was made a privy councillor. In 1918, at the general election, Henderson lost his seat, but in Sept., 1919, he was elected Labour M.P. for Widnes, and in Jan., 1923, for Newcastle East. In 1925 he was chosen chief labour whip. In Jan.-Nov., 1924, he was home secretary.

Henderson, SIR DAVID (1862-1921). British soldier. Born in Glasgow, Aug. 11, 1862, he joined the Argyll and Sutherland Highlanders in 1883. He saw service in the Sudan, 1898, and in South Africa, becoming director of the intelligence dept., 1900. He graduated as an air pilot



Sir David Henderson, British soldier
Russell

in Aug., 1911. In July, 1912, he was appointed director of military training, and in 1913 became director-general of military aeronautics. The efficiency of the three or four squadrons which went to France on the outbreak of the Great War, and the subsequent development of the air arm, were largely due to Henderson. In Oct., 1917, he vacated his seat on the Army Council to undertake special work, and resigned the vice-presidency of the air council in the spring of 1918. He became director-general of the League of Red Cross Societies, Geneva, in 1919. He received his knighthood in 1914. He died at Geneva, Aug. 17, 1921.

Henderson, GEORGE FRANCIS ROBERT (1854-1903). British soldier and historian. Born at St. Helier, Jersey, June 2, 1854, the son of a schoolmaster, he was educated at Leeds Grammar School and S. John's College, Oxford. He went thence to Sandhurst, and in 1878 entered the army, York and Lancaster Regiment. In 1882 he served in Egypt, distinguishing himself at Tel-el-Kebir. The succeeding years were mainly devoted to the study of military history, and in 1889 appeared *The*



Arthur Henderson, British politician
Russell

Campaign of Fredericksburg. In the same year he joined the teaching staff at Sandhurst, and in 1892 became professor of military history at the staff college, where he remained until 1899.

He was director of military intelligence during the earlier part of the S. African War, and he was just beginning the official history of that struggle when he died in Egypt, March 5, 1903. Regarded as the first military historian of his day, Henderson's great work was *Stonewall Jackson and the American Civil War*, 1898. He also wrote a monograph on *Spicheren*, 1898. His lectures and papers were published as *The Science of War* in 1905; this volume was edited by Colonel Neil Malcolm and contained a memoir by Earl Roberts.

Hendon. Urban district and village of Middlesex, England. It stands on high ground, near the river Brent, 8 m. N.W. of London, with a station on the M.R., and has motor-bus connexion with Golder's Green and the City, while electric trams run from Cricklewood to beyond Edgware. The main street, called The Burroughs, runs S.W. to Station Road, which leads to the Edgware Road, by the Brent Reservoir, where are the Upper Welsh Harp and the Old Welsh Harp, popular holiday resorts, with boating and fishing accommodation. W. of the rly. line are the Hendon Asylum (Central London Sick Asylum) and the London Aerodrome, the principal aviation centre in Great Britain. Near by are the works of the Grahame-White Aviation Co., Ltd. The district is rapidly growing.

On a summit N. of the village is the old Perpendicular parish church of S. Mary, partly rebuilt in 1827, and notable for its battlemented tower, ancient roof, glass, and monuments, which include an effigy of Sir William Rawlinson (d. 1703). In the churchyard, which commands fine views towards

Harrow, Stanmore, Mill Hill, and Totteridge, are the graves of Woolner, the sculptor, and Emily, first wife of Coventry Patmore, the poet. The manor house was the occasional residence of the abbots of Westminster; on its site is Tenderden House, sometime the home of Lord Chief Justice Tenderden (d. 1832). Hendon Hall was the home of Garrick, who owned the manor.

Hendon derived its name from Heandune or Highdown, and is mentioned as Handone in Domesday. It gives its name to a co. division returning one member to Parliament. There are a number of almshouses. Pop. (1921) 56,014. See Aerodrome.

Hengelo. Town of the Netherlands, in the prov. of Overijssel. It stands on a small stream, 27 m. E. of Deventer, and is an important rly. junction of several lines. The principal industry is the manufacture of textiles. Pop. 25,231.

Hengist. Anglo-Saxon chief, reputed the leader of the first Anglo-Saxon invaders of England. The story is that the British king Vortigern invited the Anglo-Saxons, or some people of kindred race, to come over and help him against his enemies. Under Hengist and his brother Horsa, they came in or about 450, landing at Ebbsfleet in Kent. They settled in Thanet, becoming little kings; but they soon quarrelled with the British, and in a fight near Aylesford in 455, Horsa was killed. Hengist reigned until 488, leaving a son Oise.

Hengler's Circus. Amphitheatre, formerly in Argyll Street, Regent Street, London, W. It was built by Frederick Charles Hengler in 1871, and rebuilt, 1884, on the site of Argyll House, a residence of the ducal family of Argyll and later of the 4th earl of Aberdeen. The site of Hengler's Circus, which combined equestrian displays with spectacular performances by children, is now occupied by the Palladium music-hall.

Hénin. Village and hill in France. The village, known as Hénin-sur-Cojeul, is in the dept. of Pas-de-Calais. It lies to the E. of the Arras-Bapaume road, 5 m. S.E. of Arras. It was captured by the British on April 3, 1917. Here in March, 1918, the British 3rd division made a great stand against the German

offensive towards Arras, which the Germans aimed at capturing by a flank assault between Hénin and Lagnicourt.

Hénin was yielded after a stiff resistance and was recaptured by the 52nd division, August 24, 1918. Hénin Hill, near by, taken by the Germans, March 22, 1918, was the scene of a fine stand by the 11th Suffolk regt. and the 40th Machine-gun battalion. Hénin-Liétard, a town in the dept. of Pas-de-Calais, is 16 m. E.S.E. of Béthune, and has coal mines. Pop. 15,000. See Arras, Battles of; Somme Battles of the.

Héninel. Village of France, in the dept. of Pas-de-Calais. Situated 2 m. N.E. of Hénin-sur-Cojeul, it was captured by the British on April 12, 1917, together with Wancourt and a section of the Hindenburg line to the S. of the Cojeul. Recaptured by the Germans in their spring offensive of 1918, it was retaken by the British, Aug. 26, 1918. See Arras, Battles of.

Henley. WALTER DE. Medieval writer of the 13th century. His reputation rests entirely on his book on husbandry. Written in French, this was long regarded as the standard book of the kind, a fact attested by the many existing manuscripts and by its translation into English, Welsh, and Latin. There is a modern translation published by the Royal Historical Society. Henley was probably a Dominican monk. See Agriculture.

Henley, WILLIAM ERNEST (1849-1903). British poet, playwright, critic, and journalist. Born at

Gloucester, Aug. 23, 1849, he was educated at the Crypt Grammar School of that town, where Thomas Edward Brown, the Manx poet, was one of his masters. Tuberculous disease



W. E. Henley,
British poet
Ellotti & Fry

of the leg threatening him with the loss of a limb, in 1873 he went to Edinburgh to be treated by Prof. (afterwards Lord) Lister. The limb was saved after twenty months in hospital, during which time he was visited by Stevenson, who became his intimate friend.

After leaving hospital, Henley devoted himself to literary work, settling in London in 1877. He edited successively the weekly paper *London*, *The Magazine of Art*, *The Scots* (afterwards the *National Observer*), and *The New Review*; and was a frequent contributor, chiefly of critical articles,



Hendon. Parish church of St. Mary's, from the south-east

to other papers and magazines. (See Views and Reviews, 1890, and Essays, 1921.)

Meantime he obtained recognition as poet with *A Book of Verses*, 1888, which included those he had written on his Edinburgh sick-bed under the title of *Hospital Verses*; *The Song of the Sword*, 1892; *For England's Sake*, 1900, a product of the wave of patriotic feeling which swept over the country during the S. African War. He edited, with T. F. Henderson, the *Centenary Burns*, 1896-97, to which he contributed a noteworthy critical appreciation of the poet, afterwards published separately; also *Lyra Heroica*, 1891, a book of verse for boys. With R. L. Stevenson he collaborated in four plays. His activities also included editions of the *Works of Standard Authors*.

tion beneath the Chilterns. Brewing and malting are carried on, but it is chiefly known as a boating centre. A fine bridge crosses the river here; built in 1786, this replaced one of great age. The church of S. Mary, with a lofty tower, is an old building; there is a school dating from the early 17th century, and a town hall. Henley was made a corporate town in 1570. Market day, Thurs. Pop. 6,500.

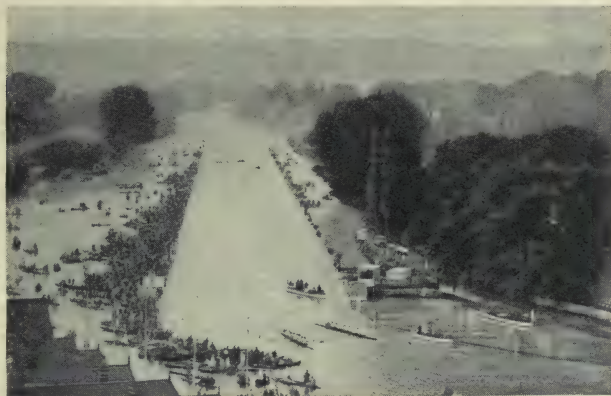
Henley Regatta. Sporting fixture, embracing rowing and sculling races among amateurs. Connected with the rowing clubs of Oxford and Cambridge, Eton, etc., and admitting competitors belonging to similar institutions in foreign countries, it was inaugurated in 1839. It takes place annually in July on the Thames at Henley, Oxfordshire. The following are the different

Henna. Powdered leaves of *Lawsonia alba* or *inermis*, a shrub that grows in tropical Asia. It is used for dyeing the hair a reddish-brown colour, for which purpose the powder is made into a paste with water, applied to the hair and allowed to remain on all night.

Henner, JEAN JACQUES (1829-1905). French painter. Born at Bernwiller, Alsace, March 5, 1829, he studied under Drolling and Picot. He won the Prix de Rome in 1858, and, after visiting Italy, developed as a painter of religious and classical figure subjects, four of which are in the Luxembourg. His reputation rests chiefly on his pictures of the nude.

Henri, ROBERT (b. 1865). American painter. Born at Cincinnati, he studied at the Pennsylvania Academy, at the Beaux Arts and Julian's in Paris, and travelled in France, Spain, and Italy. Many American permanent collections possess examples of his art, and in 1899 his picture, *La Neige*, was purchased from the Salon by the French Government for the Luxembourg.

Henrietta Maria (1609-69). Queen of Charles I. The youngest daughter of Henry IV of France, she was born in Paris, Nov. 25, 1609. Betrothed to Charles in 1624, after he had failed to secure a Spanish bride, she was married to him by proxy in May, 1625, just after Charles's accession. The queen was fond of gaiety and extravagant, but her partiality for the Roman Catholics governed almost all she did in English politics. To the indignation of the people, she gave countenance and more to her co-religionists, and just before the Civil War her activities did



Henley Regatta. General view of the Thames course, looking down river. Races are rowed upstream from Temple Island, in the distance

He died at Woking, July 11, 1903. See *Life*, L. C. Cornford, 1913.

Henley-on-Thames. Municipal bor. and market town of Oxfordshire. It stands on the N. side of the Thames, 36 m. from London, and is served by the G.W. Rly. Its beauty is enhanced by its situa-

tion and the year of their foundation. Grand Challenge Cup, for eight oars, 1839; Stewards' Challenge Cup, for four oars, 1840; Diamond Sculls, for single scullers, 1844; Silver Goblets, for pair oars, 1845; Ladies' Challenge Plate, for eight oars, 1845; Visitors' Chal-

lenge Cup, for four oars, 1847; Wyfold Challenge Cup, for four oars, 1855. and the Thames Challenge Cup, for eight oars, 1868. The regatta is held under the rules of the Amateur Rowing Association. In 1915-19 there was no regatta, owing to the Great War, though in 1919 a substitute regatta took place. See *Rowing at Henley*, T. A. Cook, 1919.



Henley-on-Thames. The Berkshire bank of the river and Temple Island

Frith



Henrietta Maria
After Van Dyck

much to fan the flames of discontent. Early in the war she returned from a visit to France with money and stores, and collected a party of royalists, who marched to her husband's aid. In 1644, however, she left England and never saw Charles again, although she urged him continually to resist, and was always scheming in his interests and those of their children. During the Commonwealth the queen remained in France, but she returned to England in 1660, living for some time at Somerset House. She died at Colombes, near Paris, Aug. 31, 1669.

Henry. Unit measurement of an induced electric current. When the inducing current is changing at the rate of one ampère per second and produces in an adjacent circuit a pressure difference of one volt, the degree of inductance is equal to one henry. *See* Unit, Electrical.

Henry. Masculine Christian name. Its meaning, prince of the house, is seen best in its German form, Heinrich. Extensively used in Germany and France, it has always been very popular in England, but less so in Scotland. The French form is Henri, and the Spanish Enrique. Henrietta, Henriette, and Harriet are feminine forms. Harry is a popular English form of Henry.

Henry I (1068-1135). King of England. Born at Selby, Yorkshire, he was the third surviving son of William the Conqueror, the only one born in England after the Conquest. On the death of William II he promptly secured the throne in the absence of his



**Henry I,
King of England**

elder brother Robert of Normandy. He was shrewd enough to realize the advantage of establishing a firm and just government, conciliating his English subjects, and acquiring a thorough mastery over the turbulent Norman baronage. The claims of his brother Robert, a convenient figurehead for the barons, compelled him to fight for his crown, and to make himself master of Robert's duchy of Normandy as well as of England.

In the course of his reign of thirty-five years (1100-1135) he won for himself the name of the lion of justice, laying the foundations of the work which was carried out by his grandson, Henry II; especially by his organization of the Curia Regis as the royal court

of law administered by trained lawyers, and of the itinerant justices whose courts periodically supervised the administration of justice in the provinces. In 1103 he became involved in a dispute with Anselm on the investiture question. Henry's only son, William, was drowned in the White Ship. He left his throne to his daughter, Matilda or Maud, widow of the emperor Henry V, and wife of Geoffrey of Anjou; but on his death, Dec. 1, 1135, the crown was successfully claimed by his nephew Stephen. *See* Investiture.

Henry II (1133-89). King of England, the first of the Plantagenets. He was born at Le Mans,



**Henry II,
King of England**

March 5, 1133, the son of Geoffrey, count of Anjou, who was the second husband of the Empress Matilda or Maud, daughter of Henry I of England. Maud was disposed of the English throne by her cousin Stephen of Boulogne, whose nineteen years' reign was a nightmare of civil war and feudal anarchy. Young Henry succeeded his father as count of Anjou, received his mother's duchy of Normandy which Stephen had not seized, and married Eleanor, duchess of Aquitaine, in 1152, thereby becoming, in effect, lord of the western half of France. In 1154 he succeeded Stephen on the English throne in place of his mother, who still survived.

Though now only twenty-one he had proved himself to be extraordinarily prompt, energetic, self-willed, and capable. In France, though a feudatory, his power at least rivalled that of the king, and his ambitions were European rather than English. But he realized that his kingdom should provide the real basis of power; and though he spent more than half his reign in France, he devoted himself to the establishment in England of a powerful monarchy.

Without delay, he cleared the country of the mercenaries and adventurers who had swarmed into it under Stephen, pulled down some thousands of the castles which the barons had built, and stamped out all resistance by the rapidity of his movements. The country was weary of anarchy, and the great majority of the barons were now in favour of restoring law and order. In the struggle with his archbishop, Thomas Becket (*q.v.*), he strove with only partial success to subject the clergy to the ordin-

ary law, and to assert the royal supremacy over the clerical organization. By scutage, the partial substitution of money payments for military services, and by a revival of the old English *fyrd* or militia, he strengthened the military ascendancy of the crown over the baronage. He reorganized the administration of justice and finance on lines suggested by Henry I.

He sanctioned the intervention in Ireland of his barons, and then compelled both them and the native chiefs to recognize him as overlord, Ireland being thus annexed to the English crown. His later years were vexed by the turbulent disobedience of his sons, and he died at Chinon, July 6, 1189, in the course of a struggle with his son and successor, Richard Cœur de Lion, who had joined in arms against him with the French king, Philip. *See* Avranches; consult also Lives, Mrs. J. R. Green, 1888; L. F. Salzman, 1914.

Henry III (1207-72). King of England. Born at Winchester, Oct. 1, 1207, he succeeded his father,



**Henry III,
King of England**

King John, in 1216, while the struggle with the barons was still in progress. The general recognition of the young king was, however, soon procured by the veteran, William Marshal, earl of Pembroke. During the years of his minority the country was well governed, first by Pembroke and then by Hubert de Burgh.

In 1227 Henry's personal reign began. Unfortunately he was one of the most incompetent of English kings. With more cultivated tastes than most of his contemporaries, personally brave and virtuous, and a devoted son of the Church, he lacked any conception of his duties as a king. First he fell wholly under the influence of his mother's Poitevin connexions, who filled all the offices of state. The pressure of the irritated barons removed the Poitevins, but on Henry's marriage with Eleanor of Provence, in 1236, a new flood of foreigners usurped all positions of importance, and under their influence the provisions of Magna Carta extorted by the barons from his father were persistently ignored. Matters came to a head when Henry, in obedience to the pope, accepted the crown of Sicily for his son Edmund, and endeavoured to procure from the country the money necessary to secure it.

The Great Council of barons, now headed by Simon de Montfort, assembled in arms at Oxford in 1258, and compelled the king to accept the Provisions of Oxford, which instituted an elaborate machinery of baronial committees to organize the government of the realm. The barons themselves were so little of one mind that Henry, supported by the arbitration of Louis IX of France, was enabled to repudiate the Provisions, and Montfort's party prepared to resist. The section of the barons whose chief aim was to secure their own independence supported the king. Montfort defeated the royalists at the battle of Lewes, May 14, 1264, and virtually assumed the functions of a dictator.

But Montfort's dictatorship was resented; the royalists rose in arms and Montfort was killed at the battle of Evesham, Aug. 4, 1265. The king was now dominated by the personality of his extremely able son, who was presently to succeed him as Edward I, and to him Henry now resigned the real control of the state. Order was restored and Edward himself began to enforce the very principles for which Montfort had died. Henry died Nov. 1, 1272.

Henry IV (1367-1413). King of England. Henry of Bolingbroke, known successively as earl of Here-



Henry IV

ford, earl of Derby, duke of Lancaster, and Henry IV of England, was born near Spilsby, Lincolnshire, April 3, 1367. He was the son of John of Gaunt, duke of Lancaster, grandson of Edward III, and cousin of Richard II. During Richard's reign he was one of the lords appellant who opposed the king's early policy. In 1398 he was sent into exile. On his father's death he returned to England in 1399, nominally to claim his estates, actually to depose Richard and set himself on the throne; his title being derived from parliament, which acknowledged him as the lawful heir, disregarding the superior claims of his infant cousin, Edmund Mortimer.

With him began the rule of the house of Lancaster, in circumstances which compelled the Lancastrian kings to yield unprecedented submission to the will of parliament. Henry's need for the alliance of the Church produced

the first enactment for the burning of heretics and the suppression of Lollardy. A revolt in Wales, headed by Owen Glendower, was followed by a still more serious revolt of the Percys, which was ended by the battle of Shrewsbury, July 21, 1403. In 1405 there was another insurrection prompted by the exiled Percy of Northumberland and headed by Mowbray and Archbishop Scrope, and another in 1408. After this, Henry was much troubled by the antagonism of his council, headed by the prince of Wales, afterwards Henry V. He died March 20, 1413. See History of England under Henry IV, J. H. Wylie, 1884-98.

Henry V (1387-1422). King of England. Henry of Monmouth, born Aug. 9, 1387, succeeded his father, Henry IV, in 1413.



Henry V

The legends concerning "Madcap Hal" are hardly to be trusted. It is quite certain that, as prince of Wales, Henry acquired very serious training as a soldier in the campaign against the Percys and in Wales, and that he played an active part at the council table during his father's last years. Certainly he exhibited on his accession a character and a high sense of responsibility not generally anticipated. Something of a religious zealot, as king he persecuted heresy sternly, persuading himself that his secular ambitions were justified because he was an instrument in the hands of the Almighty for the regeneration of a corrupt and demoralized France.

At the beginning of his reign his power of swift decision and rapid action were displayed in the prompt and crushing suppression of a Lollard insurrection at its outset. He then at once turned his mind to the popular project of reviving the quite untenable claim of the English kings to the French crown, France at the time being distracted by the rival factions of Burgundians and Armagnacs. In 1415 an expedition set sail for Normandy, laid siege to Harfleur, and captured it. Leaving a garrison there, Henry, with a small available force of efficient, not more than 8,000 men, made an ostentatious march through Normandy to Calais. This at last brought down upon him the hosts

of the French, who had temporarily adjusted their differences, and over them his little army won the victory of Agincourt, Oct. 25, 1415.

The next two years he devoted to serious preparations for an organized conquest. In 1417 he again landed in Normandy and set about its systematic reduction, taking city after city and establishing a regular government as he advanced. In Jan., 1419, Rouen fell. The assassination of John of Burgundy drove his son Philip into the arms of the English. The Burgundian faction held possession of the person of the crazy king Charles VI, and on May 21, 1420, the treaty of Troyes was signed which recognized Henry as heir to Charles and regent during his life, while it gave him the hand of the princess Catherine in marriage. The greater part of France, however, repudiated the treaty. It was still necessary to continue the process of systematic conquest, and before even the whole of the N. had been brought into subjection, Henry died of dysentery at Vincennes, Aug. 31, 1422. See Agincourt; consult Henry V, A. J. Church, 1889; Henry V, C. L. Kingsford, 1901; The Reign of Henry V, J. H. Wylie, 1914-19.

Henry VI (1421-71). King of England. Henry of Windsor, born Dec. 6, 1421, son of Henry V, suc-



Henry VI

ceeded to the English throne Aug. 31, 1422. During his childhood the government was in the hands of a council, while his uncle, the duke of Bedford, acted as regent in France. Before Bedford's death, in 1435, it had become virtually certain that the French conquests of Henry V would not be retained. Joan of Arc (*q.v.*) had revived the French national spirit, and the tide of English victories was turned.

The second definitely marked section of the reign extends from 1435 to 1453. It witnessed the gradual expulsion of the English not only from northern France, conquered by Henry V, but even from Guienne, which had never been entirely separated from the English crown for 300 years. Only the Calais Pale was left. After Bedford's death the party of the Beauforts and Poles was dominant, the Beauforts being legitimated descendants of John of Gaunt, who

hoped to secure the succession for themselves, as they ultimately did in the person of Henry VII. The opposition to them was headed by the king's uncle, Humphrey, duke of Gloucester, and, after his death in 1447, by Richard of York, the grandson of Edmund Mortimer. In 1445 Henry married Margaret of Anjou, who allied herself with the Beauforts.

After Gloucester's death, Richard was the nearest prince of the blood and the heir presumptive to the throne until the birth of a prince of Wales in 1453. The basis of the strife between the Yorkist and Beaufort factions was the fact that the king was very nearly an imbecile and occasionally quite insane, so that York claimed the right to exercise the authority of the heir.

From 1453 onwards (the third phase of the reign) the rivalry became increasingly acute—York acting as Protector of the Realm when the king was quite mad, the queen's party regaining the ascendancy when he recovered. The coming War of the Roses was foreshadowed in the battle of St. Albans, May 22, 1455, which was followed by a temporary reconciliation; but in 1459 open war broke out. York, after a victory at Northampton where Henry was taken prisoner, July 10, 1460, claimed the crown for himself in virtue of his descent from the elder brother of John of Gaunt; but he accepted a compromise, by which the crown was left to Henry during his life, but York, instead of the prince of Wales, was recognized as his heir.

York was killed at Wakefield, Dec. 31, 1460. His son Edward seized the crown with the aid of the earl of Warwick, and crushed the Lancastrians at Towton, March 29, 1461, from which year dates the reign of Edward IV. Meanwhile Henry had escaped from his captors and found refuge in Scotland. In 1465 he was caught again and imprisoned in the Tower. In 1470 Warwick revolted against Edward, drove him out of the country, and again set Henry on the throne. But in 1471 Edward returned, finally crushed the Lancastrians at Barnet, April 14, and Tewkesbury, May 4, where the prince of Wales was killed, and secured his throne by secretly putting Henry to death, May 21, 1471.

Henry was the gentlest and most pious of men, and most earnest in the spread of education. To him England owes many educational foundations, notably those of Eton and King's College, Cambridge. See *The Houses of Lancaster and York*, James Gairdner, 9th ed. 1896; *Henry the Sixth*, repr. of J. Blacman's *Memoir*, M. R. James, 1919.

Henry VII (1457–1509). King of England. Henry Tudor, earl of Richmond, born



Henry VII,
King of England

IV. He overthrew and slew Richard III at the battle of Bosworth, Aug. 22, 1485, was formally recognized by parliament as the legitimate king, and secured the position of his posterity by marrying Elizabeth of York, the eldest daughter of Edward IV, whose brothers had been murdered by the last king.

The young earl of Warwick, the male representative of the Yorkist line, was shut up in the Tower. Lambert Simnel, a pretender who personated Warwick, was made the figurehead of a Yorkist revolt which was easily crushed. A more dangerous pretender was Perkin Warbeck, who claimed to be the younger of the two princes murdered in the Tower by Richard III. He was finally captured in 1497, and both he and Warwick were executed in 1499.

Henry's great task was the re-establishment in England of a strong government in the control of the crown. To this end the first necessity was to destroy the power of the remnant of the nobles left by the War of the Roses. This Henry effected by heavy fines and confiscations which filled the royal treasury and helped him, after 1499, to dispense with parliaments which until then he had summoned frequently. The laws forbidding the nobles to maintain retainers were strictly enforced.

Henry avoided foreign wars, relying upon diplomatic action and alliance with the rising power of Spain as a check upon France. Partly in order to raise the middle class as a counterpoise to the nobles Henry directed his policy to the expansion of commerce, though he used its restriction as a weapon against political adversaries on the Continent. He died at Richmond, April 22, 1509, leaving his successor an unprecedented accumulation of wealth. See *Lives*, J. Gairdner, 1889; G. Temperley, 1919.

Henry VIII (1491–1547). King of England. Henry, second son of Henry VII, born at Greenwich, June 28, 1491, succeeded his father in 1509, his elder brother Arthur having died in 1502. Having ob-

tained a papal dispensation, he married his brother's widow, Catherine of Aragon. His reign falls into two definite periods, the first, that of Wolsey's ascendancy, ending in 1529. The second is marked by the complete establishment of the royal supremacy, in which Henry's principal agent was Thomas Cromwell.

The young king was inveigled into a war with France by Ferdinand of Spain and the emperor Maximilian, but the war came to nothing. In the course of it a Scottish invasion was crushed at the great battle of Flodden, Sept. 9, 1513. Henry found in Wolsey a minister to whom he could safely entrust the control of state affairs; though the king's own will was always supreme. The cardinal sought to make England the arbiter between the two powerful young European monarchs, Francis I and Charles V; but it was probably against Wolsey's will that England in 1522 sided with Charles



Henry VIII
After Holbein

in his war with Francis, playing therein no very effective part.

Wolsey's fall was brought about by Henry's determination to marry Anne Boleyn, and for that purpose to procure the nullification of his marriage with Catherine of Aragon. In 1529 Wolsey failed to procure the papal sanction for the divorce, and was in consequence dismissed, with rank ingratitude for his faithful service. His policy of holding the balance between Charles and Francis fell into abeyance; Henry subordinated all else to coercing the pope.

Supported by the parliament, which he summoned with that end in view, and probably guided by Cromwell in the methods he adopted, Henry compelled the clergy to acknowledge him as supreme head

of the Church in England; ended once for all the payments made to the papal treasury; and finally repudiated the ecclesiastical authority of the pope in England. In defiance of the pope, the English ecclesiastical courts pronounced the marriage with Catherine void, and Henry married Anne Boleyn.

The next step was the suppression of the monasteries; the smaller houses were dissolved on the score of immorality in 1536, and the larger in 1539, partly on the same charge and partly on that of treason. Henry, however, permitted no departure from the recognized doctrines of the Church beyond distinguishing between practices which were essential and those which were enforced as "convenient."

A Catholic insurrection in the north called the Pilgrimage of Grace, in 1536, was mercilessly and somewhat treacherously suppressed. The royal authority was secured by the Treasons Act, 1534, and the Royal Proclamations Act in 1539. Henry was always careful to obtain every increase of royal power, and sanction for all legislation, from parliament itself. Now, with the same cynical ingratitude which had flung Wolsey aside, he sent Cromwell to his doom in 1540.

The last six years of the reign were marked by a desultory war with France, and by the crushing overthrow of an invading Scots army at Solway Moss in 1542. Henry married six times. The marriage with Catherine of Aragon was annulled; Anne Boleyn was executed on charges of treasonable infidelity; Jane Seymour died on giving birth to the future Edward VI; the marriage to Anne of Cleves was pronounced void within a few weeks of its celebration; Catherine Howard suffered the same fate as Anne Boleyn; but the sixth wife, Catherine Parr, survived her husband. Henry died Jan. 28, 1547. See Acting.

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Henry I, CALLED THE FOWLER (c. 876-936). German king. Son of a duke of Saxony, Henry succeeded him in 912, and both before and after his accession did much to protect his land from various invaders. His fame as a warrior spread far, and in 919, after Conrad's death, he was chosen German king. His reign was full of wars, for many princes refused to submit to him, and he quarrelled with the king of France over

Lorraine; but to Saxony he was a great benefactor, not unlike Alfred in England. He trained and organized an army to defend the country, had walls built around the towns, and in other ways made the duchy more secure and prosperous, also enlarging his territory by wars with his neighbours. Henry died July 2, 936, and was succeeded by his son, Otto the Great.

Henry II (973-1024). German king and Roman emperor. Born May 6, 973, a descendant of Henry the Fowler, his father was duke of Bavaria. In 995 he succeeded to the dukedom, and in 1002, when Otto III died without sons, induced the German notables to choose him as their ruler. He had some trouble with other claimants, but he managed to hold his own, and spent the next few years in Italy, in warfare with the Poles, and in crushing a series of rebellions. In 1014, there being then a lull in this strife, Henry was crowned emperor at Rome, and the concluding years of his reign were passed in an attempt to add Burgundy, then a separate kingdom, to his lands, and in fighting the Greeks in Italy, where he was the pope's ally. He died July 13, 1024. Henry, who was known as the saint, was keenly interested in ecclesiastical matters, being one of those who wished to see the Church reformed. He was canonised in 1146.

Henry III (1017-1056). German king and Roman emperor. Son of the emperor Conrad II, he was born Oct. 28, 1017. To secure his future position Conrad had him crowned king when he was only ten years old, and in a few years he began to take an active part in imperial affairs. He succeeded to the throne in 1039, no rivals appearing to dispute his inheritance, and his reign of seventeen years was almost free from that internal strife which disturbed the time of his father and his son. On the frontiers, however, Henry had full occupation. The Bohemians and the Hungarians were most troublesome; so on the other side were Burgundy and Lorraine. These risings, however, were all crushed, and having settled a dispute between three rivals for the papacy by appointing Clement II, Henry was crowned emperor at Rome in 1046. The Normans next felt the weight of his hand. The emperor, whose first wife was a daughter of Canute the Great, died Oct. 5, 1056.

Henry IV (1050-1106). German king and Roman emperor. Born Nov. 11, 1050, he was the son of the emperor Henry III, who had him chosen and crowned king before he was four years old. This

proceeding secured for him the throne when his father died in 1056, but for the next twelve years he



Henry IV.
German king

was controlled by ambitious ecclesiastics, and did not really begin to reign until 1069. Like his predecessors, he found it far from easy to make the various peoples obey him, and his early years were passed in dealing with revolts.

Henry is chiefly known as the rival of Gregory VII. He refused to give up, at the papal command, the right to invest the German bishops with their lands, and was excommunicated. Alone he would probably have been able to resist the pope, but the alliance of the latter with the powerful forces of discontent in Germany, especially strong in Saxony, was too much for him, and in 1074 he submitted to Gregory at Canossa, a deed that burnt itself into the memory of Europe, but was not really of major importance. The reconciliation did not endure; excommunication by the pope was answered by declarations of deposition by Henry, and rivals were put forward to both parties. He was for a time hard pressed, but gradually he wore down his foes.

In 1081 Henry went to Italy, gained successes in the north, and, after several rebuffs before its walls, entered Rome in 1084. Gregory was dethroned and besieged, and his successor Clement III crowned Henry emperor. The last period of Henry's life was troubled by risings on the part of his sons. The elder, Conrad, found support in Italy, but not in Germany, where Henry, the younger, had many friends. The malcontents made the old emperor prisoner, and forced him to abdicate, but he managed to escape from their hands and was preparing for a new campaign when he died at Liège, Aug. 7, 1106. See Empire; Gregory VII; Investiture.

Henry V (1081-1125). German king and Roman emperor. The son of the emperor Henry IV, he was born Jan. 8, 1081. When his elder brother Conrad revolted, the elder Henry named him as his successor, and, the princes consenting, he was crowned as such in 1099. However, he too revolted against his father, who died Jan., 1106. Henry then became sole king, and in 1111 he was crowned emperor in Rome. A previous ceremony for this purpose broke up in disorder, and this

one was preceded by disorder in Rome between the forces of the emperor and those of the pope.

This reign is marked by a settlement of the investiture controversy, though only after the bitter struggle had been continued from the time of Henry IV. The emperor attacked the lands of the pope and his friends, and set up anti-popes of his own; in return he was excommunicated and his enemies encouraged. The concordat of Worms signed in 1122 was a compromise. When not in Italy, Henry was fighting against rebellious vassals. He died at Utrecht, May 23, 1125. He married Matilda, daughter of Henry I of England, but left no children. See Investiture.

Henry VI (1165-97). German king and Roman emperor. Son of the emperor Frederick I, he was educated by clerics for the high position marked out for him by his father. When only four years old the emperor had him chosen and crowned as his successor, and when nineteen he acted as ruler of Germany. The main interest of his life arose from his marriage in 1186 to Constance, the heiress of the kingdom of Sicily, an event which led to serious trouble between pope and emperor.

In 1190, on Frederick's death, Henry began his short reign. At once he went to Italy, where the death of the king of Sicily had just given him another crown. He was crowned emperor in Rome, but he found the rebels in his southern kingdom, which included Naples, too strong for him. In Germany, too, his foes were strong and numerous, but after a year or two of fighting he brought about something like peace. In 1194 he went to Sicily; this time his armies were stronger than those of his rival Tancred, whose death took place at this time, and he was crowned king at Palermo.

This achieved, and Germany more peaceful, Henry sought to extend his power in other directions, his one aim being to make himself overlord of the kings of Europe. He had just put down a fresh rising in Italy when he died at Messina, Sept. 28, 1197. Henry was a man of some culture.

Henry VII (c. 1270-1313). German king and Roman emperor. A son of Henry III, count of Luxembourg, this prince was a Frenchman

in speech and sympathy, but, doubtless because he was none too powerful, was chosen German king in 1308. He did what he could to restore order in Germany, and in 1311 went to Italy, where Dante and the Ghibellines hoped he would restore the authority of the empire. But although crowned emperor in 1312, Henry was quite unequal to this achievement in the face of his strong and numerous enemies. He died at Buonconvento, near Siena, Aug. 24, 1313. His son was John, the blind king of Bohemia, who fell at Crecy. On Oct. 30, 1920, his remains were removed from the Campo Santo at Pisa to the cathedral, where a monument had been erected.

Henry I (1008-60). King of France. A son of King Robert and a grandson of Hugh Capet, he was crowned king in his father's lifetime. In 1031 his father died, and he reigned alone until 1059, when he made his own son Philip his colleague, dying Aug. 4 in the following year. His reign was spent in warfare, first with his brother Robert, and then with his vassals, prominent among whom was William of Normandy, the Conqueror of England. He also had relations, not always friendly, with the pope and the emperor Henry III.

Henry II (1519-59). King of France. Son of Francis I, he passed part of his early life in Spain, where from 1526-30 he was a hostage. In 1533 he married Catherine de' Medici, and in 1536 became heir to the throne on the death of his elder brother Francis. For the next ten years he occupied himself mainly in dissipations, was dominated by his mistress, Diana of Poitiers, and quarrelled with his father, one difference being due to the dauphin's Spanish sympathies. In 1547 he became king, and his rule of eleven years was a period of oppression at home and war abroad. His favourites managed everything in their own interests, for the manly frame of the king was not matched by a manly spirit.

During a tournament held to celebrate a double wedding in the royal family, Henry was wounded

in the head by the lance of the count of Montgomery on June 30, and he died July 10, 1559. Three of his sons, Francis II, Charles IX, and Henry III, came to the throne; the other was Francis, duke of Anjou. One of his daughters was the wife of Philip II of Spain, and another of Henry of Navarre.

Henry III (1551-89). King of France. Third son of Henry II and Catherine de' Medici, Henry was born at Fontainebleau, Sept. 19, 1551. In 1573 he was elected, against his own will, king of Poland. Soon the death of his elder brother, Charles IX, in 1574, brought him back to France as king. Although a man of considerable ability, the real ruler of his kingdom was his mother. He found a dangerous enemy in Henry, duke of Guise, and all but lost his crown on the Day of Barricades, May 12, 1588, when the Guise party engineered a rising in Paris, and then sought in vain to placate popular discontent by summoning the states-general at Blois. There, Dec. 23, 1588, he treacherously caused Guise to be assassinated. Excommunicated, he tried to retrieve his power by an alliance with the Huguenots and Henry of Navarre, whom he recognized as his heir, but he was mortally stabbed in Henry's camp at St. Cloud by Jacques Clément, Aug. 1, 1589.

Henry IV (1553-1610). King of France. Born at Pau, Dec. 14, 1553, he was a son of Antony of Bourbon and his wife, Jeanne d'Albret, queen of Navarre. He was brought up as a Protestant, and spent part of his youth at the French court, where he was educated, for the Bourbons were a younger branch of the royal family. The union was made closer by Henry's marriage in 1572 with Margaret, sister of Charles IX; six days later the massacre of St. Bartholomew occurred. In the same year he became king of Navarre. His life had been spared by his promise of conformity to Roman Catholicism, but in 1576 he joined the Huguenot leaders.

The absence of children to the French king and his brothers made Henry an important person in France, and for the next 13 years he was concerned in its various intrigues. He began his career as a soldier by leading the Huguenots in the short war that ended in 1580, and in 1586-87 he carried



Henry V,
German king



Henry I,
King of France



Henry III,
King of France



Henry II,
King of France

on another. The Guises and their party were determined to prevent his accession, but events compelled



Henry IV,
King of France
After Porbus

Henry III to adopt a different policy. He recognized the king of Navarre, who became titular king of France on Aug. 1, 1589. Henry had now to conquer his kingdom, which he did by a wise mixture of diplomacy and force. He won the battles of Ivry and Arques and captured Paris, but equally potent was his politic conversion in 1593 to Roman Catholicism. In 1598 Philip II of Spain, who had helped his enemies, made peace, and France, granted the edict of Nantes, was more than ready to accept Henry as king.

Henry's reign was a period of comparative prosperity for his country. Under Sully's direction much was done for industry; the burdens on the people were reduced and the evils of the civil war, to some extent, remedied. Abroad, the house of Habsburg was watched jealously, its ambitions being checked by steady encouragement to its enemies. War had just been declared upon Germany, when, on May 14, 1610, the king was assassinated by Ravaillac. Henry owed his popularity to the circumstances of his reign, the relief it brought from civil strife, and to his own qualities, his courage and gaiety, frankness and amiability. His passion for women was notorious; he had many mistresses and several illegitimate children. His lawful issue included Louis XIII, Gaston, duke of Orleans, and Henrietta Maria, the queen of Charles I.

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Henry, PRINCE (b. 1900). British prince. The third son of King George V and Queen Mary, he was born at York Cottage, March 31, 1900, and was christened Henry William Frederick Albert. The prince was delicate in early life, but benefited from residence at Broadstairs, where he was



Henry
Vandyk

a pupil at a private school. Thence he proceeded to Eton, where he joined the Officers' Training Corps. He became a 2nd lieutenant in the King's Royal Rifle Corps, July, 1919.

Henry (b. 1862). Prussian prince. The younger son of the German emperor Frederick, he was born at Potsdam, Aug. 14, 1862, and was baptized Heinrich Albrecht Wilhelm. Educated partly at Cassel, he was trained for the navy, which he entered, after a voyage round the world, in 1880. In 1901 he was made admiral, and later became inspector-general of marine, appearing from time to time as the representative of his brother William II. When the Great War broke out he was commander-in-chief of the German navy, but he was only heard of in 1915 as joint author with Hindenburg of a plan to capture Petrograd.

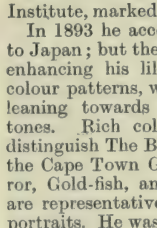
Another Prussian prince of this name was a younger brother of Frederick the Great, and a son of



Henry,
Prince of Prussia
From a print

until his death, Aug. 3, 1802.

Henry, GEORGE. Scottish painter. Born at Ayrshire, he studied at the Glasgow School of Art. In 1890, a picture of The Druids, executed in collaboration with E. A. Hornel, called attention to both painters, and in the same year Henry's Galloway Landscape, at the Glasgow



George Henry,
Scottish painter
Russell

Institute, marked a new departure. In 1893 he accompanied Hornel to Japan; but the visit, so far from enhancing his liking for brilliant colour patterns, was followed by a leaning towards more restrained tones. Rich colouring and tone distinguish The Blue Gown, now in the Cape Town Gallery; The Mirror, Gold-fish, and The Blue Veil are representative of his nameless portraits. He was elected A.R.S.A. 1892, R.S.A. 1902, and R.A. 1920.

Henry, JOSEPH (1799-1878). American physicist. Born at Albany, New York, Dec. 17, 1799, he became professor of mathematics

and natural philosophy at Albany Academy in 1826. There he at once showed a remarkable ability in electrical research and experiment, improving the electro-magnet to such an extent that his experiments marked a definite epoch in the practical applications of the electric current. In 1831-32 Henry carried out a series of important experiments in the transmission of electric current which was the forerunner of the telegraph. His discovery in 1842 that the discharge of a Leyden jar induced discharges in other circuits some distance away was a fundamental discovery of wireless telegraphy.

In 1846 Henry was appointed secretary to the Smithsonian Institution. After him was named the electric unit of self-induction. He died May 13, 1878.

Henry, MATTHEW (1662-1714). Nonconformist minister and commentator. The son of Philip



Matthew Henry,
Nonconformist
minister
From a print

Henry, he was born at Broad Oak, Flintshire, Oct. 18, 1662, and studied for the law. In 1687, having been ordained, he became a Presbyterian minister at Chester, where he was extraordinarily suc-

cessful and influential. He remained there until 1712, when he became minister of a church in Mare St., Hackney. He died at Nantwich, June 22, 1714, and there is a monument to him at Chester.

Henry wrote much, but is especially noted for his Exposition of the Old and New Testament, frequently republished, which was completed by several nonconformist divines. Henry's father, Philip Henry (1631-96), was a clergyman. He became a Nonconformist in 1662, when he was ejected from his living. He died at Broad Oak, where he had preached for several years, June 24, 1696.

Henry, O. (1862-1910). Pen name of William Sydney Porter, American short-story writer and journalist. Born at Greensboro, Guilford county, N. Carolina, Sept. 11, 1862, he became editor of a humorous weekly called The Rolling Stone, in Austin, Texas, where



Joseph Henry,
American physicist

he was paying and receiving teller in the First National Bank, and afterwards joined the staff of The



O. Henry,
American author

Post in Houston. In 1898 he began to write short stories for the magazines, of which twelve volumes have been collected.

Among the best of his stories are *The Trimmed Lamp*, *The Last of the Troubadours*, *The Passing of Black Eagle*, *The Furnished Room*, *The Defeat of the City*, *The Cop and the Anthem*, *The Last Leaf*, *The Lost Blend*, *Vanity and Some Sables*, *Lost on Dress Parade*, *Roses, Ruses and Romance*, and *Little Speck in Garnered Fruit*. Henry died in New York, June 5, 1910. See O. Henry, a biography, C. A. Smith, 1916.

Henry, PATRICK (1736-99). American orator and statesman. Born at Studley, Hanover county, Virginia, May 29, 1736, he was of Scottish-Welsh descent. Unsuccessful as a farmer and tradesman, he took up law, and rapidly built up an extensive practice. As a member of the Virginia House of Burgesses, he violently attacked the Stamp Act of 1765 and favoured an immediate rupture. A delegate to the Continental Congress of 1774, at the Virginia Convention of 1775 by an eloquent speech he induced the members to pass resolutions for arming the state. While governor of Virginia, in 1788, at the Convention assembled to ratify the federal constitution, he opposed its introduction as calculated to infringe the rights of individual states. He died June 6, 1799. See *Life, Correspondence, and Speeches of Patrick Henry*, W. W. Henry, 1891; *The True Patrick Henry*, G. Morgan, 1907.

Henry of HUNTINGDON. English chronicler. A cleric in the diocese of Lincoln, Henry lived in the early part of the 12th century and wrote a *History of the English* from the coming of Julius Caesar to the reign of Henry II. The value of the work is depreciated by the author's reliance upon ill-authenticated tradition and his occasional indulgence of his imagination. The *His-*

toria Anglorum was published in the *Rolls Series* in 1879 and has been translated into English.

Henry THE LION (1129-1195). German prince. The son of Henry the Proud, duke of Bavaria and Saxony, he belonged to the Welf family. In 1139, when only a boy, he became duke of Saxony and Bavaria, but his friends had to fight for his rights, which were threatened by Conrad II. In 1142, however, peace was made; Henry gave up Bavaria, and kept Saxony.

As duke of Saxony he made his name. He greatly extended its boundaries by driving back or conquering the heathen tribes beyond the Elbe. He recovered Bavaria, being granted the duchy by the emperor Frederick I, who was anxious for his assistance in his Italian wars. This Henry gave, until, in 1175, he refused to go to Italy to Frederick's help.

In 1181 the emperor invaded Saxony, and the duke soon submitted. Of his great possessions he was allowed to keep Brunswick and Lüneburg only, while he was banished until 1185. He died Aug. 6, 1195. Henry, who married Matilda, daughter of Henry II of England, was ancestor of the electors of Hanover and kings of Great Britain. See Frederick I; Saxony.

Henry THE MINSTREL OR BLIND HARRY (d. c. 1492). Scottish poet and reciter. Said to have been a native of Lothian, and blind from his birth, he made a living by reciting a poem of his own composition, into which he wove all the traditional stories about William Wallace. There are several entries in the royal treasurer's accounts of payments to him, 1490-92. His poem, written in the Lothian dialect, and consisting of more than 5,000 couplets, exists in a MS., dated 1488, preserved in the Advocates' Library, Edinburgh. A modernised version, by William Hamilton, of Gilbertfield, 1722, was long popular in Scotland. See *A Critical Study of Blind Harry*, J. A. Mair, 1888.

Henry (1394-1460). Portuguese prince, called the Navigator. Son of King John I, he was born at Oporto, March 4, 1394. His mother was a daughter of John of Gaunt. He took part in the conquest of Ceuta, 1415. He began to send out sailors on voyages of discovery, and with intervals continued his work for nearly 50 years. He

himself went on one or two voyages, but he was mainly occupied with organizing and financing the expeditions. He made his home at Sagres, where he erected an observatory, set on foot something like a college of navigation, and had an arsenal. He died at Sagres, Nov. 13, 1460. See Africa.

Henry VII's Chapel. Eastern extension of Westminster Abbey (*q.v.*). Founded by the king after whom it is named, it replaced the 13th century Lady Chapel in 1503-19. Henry VII intended it to be the shrine of Henry VI, who is buried at Windsor; it became his own burial place. At the E. end, in the apse, are five small chapels; the nave or central chapel is divided from the S. aisle or Margaret Chapel, and the N. aisle or Elizabeth Chapel, by the stalls of the knights and esquires of the order of the Bath (*q.v.*). In length 104 ft., breadth 70 ft., unrivalled in its sculpture, the fan tracery of its roof, its stone statues of saints, beautiful specimens of later medieval art, stone panelling and traceried windows, it is the finest example of late Perpendicular architecture in the kingdom. The name of its architect is unknown.

On the large oaken and bronze-covered doors, the grille surrounding Henry VII's tomb, and in the E. window are badges or emblems symbolical of Henry's claim to the throne. In the vault beneath the tomb, the work of Pietro Torrigiano, rest Henry VII, his wife Elizabeth of York, and James I. Below the altar Edward VI was buried. Near is the pulpit said to be Crammer's; W. of the altar were interred George II and Caroline of Anspach. In the N.E. chapel of the apse is the grave of Anne of Denmark; in the S.E. chapel the graves of Dean Stanley and his wife, Lady Augusta Stanley. In the S. or Margaret Chapel are the tombs of Margaret, countess of Lennox, Mary Queen of Scots, and Margaret Beaufort, and the graves of Charles II, many other members of the Stuart line, Mary II, William III, Queen Anne and her husband, Prince George of Denmark. Impressive features of the N. aisle or Elizabeth Chapel are the tomb of Queen Elizabeth, whose coffin rests on that of her half-sister, Queen Mary; a small urn containing bones supposed to be those of the two princes who were murdered in the Tower, Edward V and Richard of York; monuments of the princesses Sophia and Mary, infant children of James I; and the grave of Addison. Henry VII's Chapel was "restored" by Wyatt in 1807-22. See Fan-tracery; Font.



Henry



Henry the Navigator,
Portuguese prince



Henry VII's Chapel. Tomb of Henry VII and his queen in the famous Tudor Gothic chapel in Westminster Abbey. Round the walls hang the banners of the Knights of the Bath, with which it has been associated since 1725

Henry Frederick (1594-1612). Prince of Wales. The eldest son of James I, he was born at Stirling, Feb. 19, 1594. In 1604 negotiations were begun for his betrothal to the infanta Anne of Spain, but they fell through. Sent to Oxford in 1612, the prince seemed to have loved sport better than study, but took much interest in naval and military affairs. Created prince of Wales in 1610, he died Nov. 6, 1612.



Henry Frederick,
Prince of Wales

Henryson, ROBERT (c. 1430-1506). Scottish poet. He was a schoolmaster at Dunfermline, and perhaps also a notary. Among his poems are *Robene and Makynne*, the first pastoral in the Scottish language, the *Testament of Cresseid*, a sequel to Chaucer's *Troilus and Criseyde*, a metrical version of Aesop's Fables, and *The Bludy Oak*, an allegory. As a poet, Henryson shows considerable fancy and some humour.

Henschel, SIR GEORGE ISIDORE (b. 1850). Singer, composer, and conductor. Born in Breslau, Feb. 18, 1850, he studied music at Leipzig. In 1877 he came to England, where he appeared as a baritone, and from 1881-84 conducted symphony concerts at Boston, U.S.A. Returning to England, he devoted himself to singing, teaching, and conducting; in addition he founded the London Symphony Concerts, which he conducted from 1884-95. In 1881 he married Miss Lillian June Bailey (1860-1901), an American soprano. He became a British subject, and was knighted in 1914. His compositions include the opera *Nubia* and many songs. See his *Musings and Memories of a Musician*, 1919.



Sir George Henschel,
Singer and composer
Downey

Henslow, JOHN STEVENS (1796-1861). British botanist. The son of a solicitor, he was born at Rochester, Feb. 6, 1796. Educated at Rochester, Camberwell, and S. John's College, Cambridge, he was ordained. In 1822 he became professor of mineralogy at Cambridge, and in 1827 professor of botany. He did a great deal to popularise the study of botany and died May 16, 1861. His works include *A Dictionary of Botanical Terms*, 1857.

One of his sons, George (b. 1835), was, from 1866-80, lecturer on botany at S. Bartholomew's Hospital medical school.

Henslowe, PHILIP (d. 1616). English theatrical manager. He was a bourgeois of Southwark, held offices at Court, and was in partnership with Edward Alleyn (*q.v.*), who married his stepdaughter. His *Diary* (edited, with supplementary papers, by W. W. Greg, 1904-8) is a storehouse of facts relating to the inner history of the Elizabethan stage.

Henson, HERBERT HENSLEY (b. 1863). British prelate. Born in London, Nov. 8, 1863, he was a non-collegiate student at Oxford. Having taken a first-class degree, he was elected to a fellowship at All Souls' College. He was ordained and became head of Oxford House, Bethnal Green, where he worked until made vicar of Barking, and incumbent of S. Mary's Hospital, Ilford. In 1900 he was chosen canon residentiary of Westminster, and rector of S. Margaret's. There he remained until 1912. Appointed dean of Durham, he took an active interest in the university there. In 1917 he was consecrated bishop of Hereford, and in 1920 was translated to Durham.

Henson was the leading exponent of broad church ideas, including a liberal theology and a close cooperation with Nonconformists. His incisive style and his wide reading made him a formidable controversialist.

Henty, GEORGE ALFRED (1832-1902). British war correspondent and writer for boys. Born at Trumpington, near Cambridge, Dec. 8, 1832, he was educated at Westminster and Caius College, Cambridge. He served in the purveyor's department of the British army in the Crimean War. In 1866 he became correspondent for *The Standard*, and saw much fighting. These experiences he turned to good account in his long series of



George A. Henty,
British writer
Elliott & Fry

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Herbert H. Henson,
British prelate
Russell

books for boys, which he began to write in 1868. His characters are conventional, but he had the art of telling an interesting and rapidly moving story of adventure, and his books enjoyed enormous popularity. Among the best are *The Young Frano-Tireurs*, *The Cat of Bubastes*, *The Young Carthaginian*, *The Lion of S. Mark*, *With Clive in India*, *By Pike and Dyke*. Henty was a keen yachtsman, and died at Weymouth, Nov. 16, 1902.

Henzada. Dist., subdiv., and town of Burma, in the Irawadi division. Of the total about one quarter is under cultivation, and nearly the whole of the cultivated area is devoted to rice. The exports consist largely of rice, while the imports include cotton and silk piece goods and chinaware. Henzada town, on the Irawadi, 65 m. W.N.W. of Pegu, is an important trade centre. Area of dist., 2,870 sq. m. Pop., dist., 532,360; subdiv., 140,200, nearly all Buddhists; town, 25,050.

Hepatica (*Anemone hepatica*.) Perennial herb of the natural order Ranunculaceae, native of Europe. The thick, dark-green leaves are deeply divided into three oval lobes; the flowers are blue, each on a long stalk direct from the rootstock, the showy portions consisting of the sepals.

Hepatisation (Gr. *hēpar*, liver). Term applied to changes in the lung which occur in the course of pneumonia. The name is derived from the fact that the lung looks somewhat like liver. In the first stage, known as red hepatisation, the lung tissue is red, solid, firm, and airless. In a later stage, namely grey hepatisation, the colour becomes greyish-white, the surface is moister, and the lung tissue more friable. See *Pneumonia*.

Hephaestus (Gr. *Hephaistos*). In Greek mythology, god of fire and the working of metals. He was the son of Zeus and Hera, but was so disliked by his mother that she threw him out of Olympus. On another occasion Hephaestus, having offended Zeus, was again thrown out, falling for a whole day and landing in the island of Lemnos. He is represented as having been lame from birth or lamed by his fall. This probably indicates the halting beginnings of a freshly lighted fire, or the fact that smiths were often described as lame. To remedy the defect, Hephaestus is said to have made two female figures of gold, endowed with speech and powers of movement, who assisted him in walking.

Some accounts make him the husband of Charis, one of the Graces; others the husband of Aphrodite. The famous armour of

Achilles and Aeneas, and the fire-breathing bulls of Aëtes which guarded the golden fleece, were the work of Hephaestus. His chief workshop was in Lemnos, but various volcanic islands, such as Sicily, were also supposed to be the scene of his activities. At Athens he was associated with Athena and Prometheus, with whom he has many points of resemblance, and festivals with torch-races were held in their honour. In art Hephaestus is always represented as a stoutly built man with a beard, holding a smith's hammer and tongs, but showing little trace of lameness. Hephaestus was identified by the Romans with Vulcan. See *Æschylus*; *Vulcan*.

Hepplewhite, GEORGE (d. 1786). English furniture maker. After serving his apprenticeship with Gillow, a cabinet-maker at Lancaster, he started a business in London which his widow carried on after his death as A. Hepplewhite & Co. Drawings supplied by this firm were published in *The Cabinet-maker and Upholsterer's Guide* in 1788.

Hepplewhite's name is identified with the style in furniture which followed the Chippendale period, and was a cautious revolt against the solidity of the latter. Its characteristic was the curvilinear, all the pieces having sweeping lines, with a leaning to the classic style of the *Directoire* modified by English sturdiness. In the tracery of cabinets and bookcases straight rather than curving lines were used. The cabinets were placed on tall legs, usually square, though also round, and tapered. The chairs had shield, oval, circular, hoop, and interlaced heart, fretwork backs. See *Chair*; *Furniture*.

Heptameron, THE (Gr. *hepta*, seven; *hēmera*, day). Stories written in the 16th century, in imitation of Boccaccio's *Decameron*, by Marguerite, queen of Navarre (q.v.). The book tells of a company of lords and ladies who, when returning from the baths at Cautelets, were detained in a beautiful spot for seven days by the flooding of a stream in the Pyrenees, and devoted the time to telling extremely sprightly stories. See *Boccaccio*; *Italy*; *Literature*.

Heptarchy. Word derived from the Greek *hepta*, seven, and denoting the seven kingdoms (*archai*) into which Anglo-Saxon England was supposed to have been divided before 900. The seven presumably were Kent, Essex, Sussex, Wessex, Mercia, East Anglia, and Northumbria. See *England*: *History*.

Hera. In Greek mythology, sister and wife of Zeus and daughter of Cronos and Rhea. One of the major

deities of ancient Greece, by Zeus she became the mother of Arès, Hephaestus, and Hèbè. She is



Hera, Greek goddess
From a bust in the
British Museum

generally represented as being of a jealous disposition, and she displayed the utmost vindictiveness towards those with whom her husband had amours. Among those persecuted by her were

Semèlè and her child Bacchus or Dionysus, and Hercules.

Hera had frequent quarrels with her husband, and on one occasion plotted with Athena and Poseidon to put him in chains. For this she was beaten by Zeus and herself put in chains. Her annoyance with Paris (q.v.) for his judgement against her for the ownership of the golden apple led her to side with the Greeks in the Trojan War. As a married goddess, her special province was to preside over childbirth. As such the pomegranate, the symbol of fertility, the cuckoo, in which form Zeus gained her favours, and the peacock were sacred to her.

In art Hera is represented as a woman of stately beauty. Her Homeric epithet *boōpis* (cow-eyed) seems to refer to her having been originally worshipped in the form of a cow. The Romans identified her with Juno (q.v.).

Heraclea. Ancient city of Magna Græcia, Italy. It stood on the N.W. coast of the Gulf of Taranto, near the modern Policoro. A Greek colony, it was founded about 432 B.C. by Tarentum and Thurii, on the site of Siris. It became the locale of the general assembly of the Italian Greeks. Near here, in 280 B.C., Pyrrhus defeated the Romans. Afterwards it became a Roman municipium, receiving a bronze copy of the Lex Julia Municipalis, discovered in the vicinity in 1753. These *Tabulae Heracleenses* are one of the chief sources of our knowledge of the ancient municipal laws. Very little remains of the ancient city.

Heraclea Minoa. Ancient Greek city of Sicily. It stood on the S. coast, W. of Agrigento. Originally a Phœnician settlement, it was called Minoa from a tradition that it was built by Minoas. It fell into the hands of the Spartans about 510 B.C. and changed ownership many times. In 383 B.C. it owned the sway of Carthage, but it was later on destroyed by the

Carthaginians. It rose again from its ashes, and became a Carthaginian naval station in 314 B.C. It finally decayed, and few traces of its buildings remain.

Heraclea Pontica. Ancient Greek city of Bithynia, on the S. coast of the Black Sea. It was founded about 550 B.C. by colonists from Megara and Tanagra. It grew prosperous, but its power declined after Alexander's conquests, and it was sacked by the Romans after the Mithradatic wars. On its site is the modern Bender Ereğli, noted for its lignite coal mines.

Heracleidae. In Greek legend, the sons and descendants of Heracles or Hercules. Zeus had willed that the sons of Hercules should rule in Peloponnesus, but Hyllus, the eldest son, and his brothers were expelled by Eurystheus, king of Argos, and forced to seek refuge at Athens. After several attempts the Heracleidae regained possession of their inheritance, and founded the kingdoms of Argos, Lacedaemon, and Messenia. The legend has a basis of historical fact, the conquest of Peloponnesus by invading Dorians, probably led by Achaean chiefs. This invasion is known as the return of the Heracleidae.

Heracleopolis. Greek name of the ancient city Henen-suten at Ahnas, Upper Egypt. Situated on the right bank of the Bahr Yusuf, 10 m. W. of the Nile at Beni Suef, 71½ m. above Cairo, it was the capital of Middle Egypt during the IXth and Xth dynasties. It was sacred to the ram-headed god Hershef, whose correlation with Heracles occasioned its Greek name. Excavations were conducted by Naville in 1891 and Petrie in 1904.

Heracian (d. A.D. 413). Roman general and usurper. For the murder of Stilicho (408), he was made count of Africa by the emperor Honorius, to whom he rendered valuable assistance in putting down the usurper Attalus set up in Rome by Alaric. Having been raised to the consulship he proclaimed himself emperor and landed in Italy, but after a severe defeat returned to Carthage, where he was put to death by the emperor's orders.

Heraclitus (c. 540-480 B.C.). Greek philosopher. A citizen of Ephesus, he was known as the weeping philosopher from his pessimistic view of human life, and as the Dark from the obscurity of his style. Like his predecessors of the Milesian school, he referred all substances composing the material world to one element, but whereas Thales held that one element to be water and Anaxi-

menes held it to be air, Heraclitus believed that all things were variants of fire, typical of absolute unrest, the perpetual dissolution of continuance. He also held that everything was in a state of flux or movement, like the stream of a river, and that any idea of permanency about anything was an illusion of the senses. Nothing exists, but only becomes, and all becoming is the result of the conjunction of opposites; "strife is the father of all things." The only permanency is to be found in the reason underlying all movement; this reason he identifies with Zeus. Becoming, the principle of Heraclitus, is the exact opposite of Being, the principle of the Eleatics. See Philosophy. *Pron. He-ra-cly-tus.*

Heraclius (575-641). East Roman emperor 610-641. Born in Cappadocia, son of the governor of Africa, he seized the throne at a critical period, the empire being threatened by the Persians in the E. and by the Avars and Slavs in the W. At length, having reorganized the army and borrowed money from the Church, Heraclius, after defeating the Avars, undertook a series of campaigns against Persia, and gained a decisive victory near Nineveh (627) over Chosroes II.

This success, however, was counterbalanced by serious losses of territory in the W. For the rest of his reign, Heraclius was chiefly occupied with religious disputes as to the nature of Christ, and issued an Ethesis (edict) asserting that in spite of two natures there was only one will in Christ (Monothelism). While thus engaged, a new foe had arisen—the Arabs, who made themselves masters of Syria and Egypt. Overwhelmed by anxieties, Heraclius left the empire at his death in a deplorable condition.

Heraeum (Gr. *Heraion*). Temple of Hera, about 6 m. from Argos, in Peloponnesus, ancient Greece. This temple was the centre of the worship of Hera for the whole Greek world. Burned down in 423 B.C., it was rebuilt with great splendour. Especially famous was the great statue of the goddess in ivory and gold by the sculptor Polycleitus. Considerable excavations have been made on the site, as a result of which terra-cotta figurines, vases, and other objects of art have been found. See Argive Heraeum, C. Waldstein, 1902-5.

Herald (old Fr. *herault*). Name, of doubtful etymology, given to certain officials in ancient and modern times. In the Homeric age of ancient Greece, the herald or *kéryx* (one who proclaims) acted as confidential servant to the kings and princes, waited upon them at



Herald in his tabard reading the proclamation of the accession of George V

table, and acted as their representative. In historical times his functions were religious, political, and judicial. He examined the victims for sacrifice, recited prayers before any public business was undertaken, convened the public assemblies, summoned litigants to the court, instructed the proper officials to carry out its sentence, proclaimed the lists of those publicly honoured and of the victors of the Olympic games. The herald's person was sacred; he had free meals in the Prytaneum, a seat of honour in the theatre, and received a salary. His special badge of office was the staff, *kérykeion*, latinised as *caduceus* (q.v.).

In Rome, the herald (*praeco, caduceator*) was a less important person, no religious character being attached to his office. He was a public or private crier, who gave notice when anything was lost in the streets, and played a part at auctions like that of the modern auctioneer. There were also heralds in the service of the state and attached to the higher magistrates whose duties more or less corresponded to those of the Greek *kérykes*. The *praeco* and *caduceator* were distinguished as the messengers of peace from the *fetiales*, upon whom lay the responsibility of declaring war with certain solemn formalities.

In early medieval times the heralds acted as messengers of sovereign princes, and had, among other duties, to convey challenges, open negotiations for armistices and peace, and take part in matrimonial and other ceremonies. Thus they gradually assumed largely the functions of masters of the ceremonies and recorders of pedigrees and alliances. Hence,

when armory arose and the knights began to decorate their shields and banners with distinctive symbols, to avoid confusion and ensure proper order being observed, the heralds were appointed to look after armory, register pedigrees, and see that knights observed conduct becoming their dignity. In England they were made into a college of arms.

Apart from the heralds who are members of the college many others were instituted from time to time, both by the kings of England and the princes. Thus a herald styled Bath king of arms, who does not belong to that corporation, was attached to the order of the

Bath when revived by George I, and another king of arms, with no distinctive appellation, is an official of the order of S. Michael and S. George. Heralds extraordinary, who may have special functions assigned to them, but who also are not members of the college, are occasionally appointed. Until Tudor times many great nobles, such as the Percys, Nevills, earls of Salisbury, and Sir John Chandos, one of the original knights of the garter, had their own pursuivants, named after the family badge or crest, who acted as the family heralds and genealogists, as well as confidential messengers to their masters. See College of Arms.

HERALDRY AND COATS OF ARMS

G. G. Rothery, Author, The A.B.C. of Heraldry

In this work there are articles on all the chief terms used in heraldry, e.g. Cadency; Charge; Cross; Quartering; Saltire; Supporter. See Coat of Arms; College of Arms; Knighthood; Peerage; and articles on Howard and other noble families

In the strict sense of the word, heraldry embraces all those duties which fall within the domain of the herald, and so comprises genealogy, the rules of precedence and official ceremonial, and the art of armory. Generally, however, the term is restricted to the last-named branch, which is concerned with the devices placed on shields or banners as distinguishing marks of individuals, families, or territorial divisions, as well as the ornaments surrounding the shield.

Heraldry as a science, resting on hereditary descent of such devices as a fundamental fact, cannot be traced further back than the third crusade (1139-92), though there were signs of it nearly a hundred years earlier, and no doubt it owed a great debt to that art of symbolism adopted in remote ages and by many peoples to distinguish tribes and individuals. Some of the symbols or charges used in heraldry are unquestionably of extreme antiquity. Such are the snake-like dragon, the lion, the single and double-headed eagle, the leaping dolphin, the cramponed cross, the saltire, the crescent and circular ring, the wavy or chevroned line, as well as such conventionalised floral and plant forms as the cinquefoil.

Primitive Charges and Symbols

All these and many more may be found on the coins, pottery, and monuments of ancient Greece and Rome, often shown as decorating the shields or standards of warriors. Many of these charges may be traced on Assyrian monuments and in the hieroglyphics of Egypt (where we see them representing dynasties, gods, and territorial divisions), and even among savage

tribes chiefs and whole tribes are found using distinctive head-dresses or tattoo marks. Many of these symbols were totemistic, and to that degree were really hereditary to a family. But in the main, outside of totemism and those symbols attributed to tribal or local divinities, the devices found in antiquity and among barbarian people were personal, and do not often show stability even in that restricted sense.

This want of stability characterises the early heraldry of Europe. While it is extremely likely that over most of Europe certain of the totemistic, tribal, and territorial devices subsisted well into the feudal days, there is no direct evidence that such were used on shields, helmets, or standards. What appears to have happened is that knights fighting in the East as Crusaders encountered foes who fought under leaders bearing peculiar devices on the armour and shields, and taking decorated standards into warfare.

Symbolism was always highly cultivated in the East, and it was distinctly well regulated among the Saracenic warriors, who may have inherited the system from Egypt, and by way of Syria. As the armour of the Christian knights became heavier and thus more effective as an agency for concealing individuality, the advantages of these identity symbols, serving as signs for rallying scattered henchmen, became self-evident, and were gradually adopted. It is certain that some of the best known feudal coats of arms only appeared towards the 13th century.

No heraldic symbol of any kind appeared on the great seals of

England until the reign of Richard I. His first great seal has no such device as three lions, but we see on the shield borne by his equestrian figure apparently a lion combatant, i.e. rampant, in a fighting attitude. As the shield is curved, only half is shown, so the vis-à-vis, if there was one, is not seen. The three lions passant guardant do not appear until his second seal. It is true that in the great seals of the earlier kings only the backs, or insides, of the shields are shown; but if the out-sides had borne important devices, the engravers would certainly have been careful to display them.

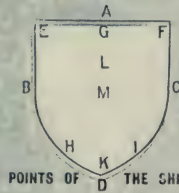
On the Continent the emperor Frederick Barbarossa is credited with fostering heraldry. In England Edward I was the first to appoint heralds, a lead followed by Henry IV, but it was not until the reign of Henry V that a proclamation was issued obliging knights to appeal to the king of heralds before assuming armorial devices. Edward III instituted the court of chivalry under the earl marshal, and out of its activities sprang the practice of visitations, or perambulating courts held by heralds and pursuivants, to inquire into armorial matters, issue confirmation of grants, and register genealogies.

The Court of Chivalry

The last of these visitations was held in 1686. Such of the records as still exist are very valuable. The court of chivalry, or earl marshal's court, ceased to exist in 1907. Its most famous achievement was the trial of the issue between Sir Richard le Scrope and Sir Robert Grosvenor, both of whom claimed a golden bend on a blue field. From 1385 to 1390 a splendid array of English, Scottish, and Continental chivalry appeared to give evidence, and finally Richard II delivered judgement in favour of le Scrope.

Although at first many of the armorial devices assumed were personal, as was natural from its source of origin, very soon it became in the main feudal and territorial. That is to say, many of the most prized coats of arms were attached to fiefs. Consequently we find that men of noble birth and ancient lineage who became possessed of important fiefs by inheritance, marriage, or gift, commonly gave up their paternal arms for those of the territorial dignity.

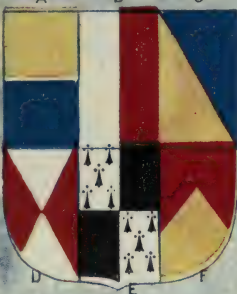
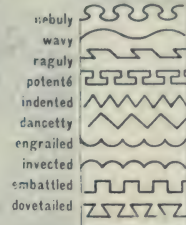
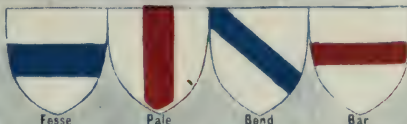
In many more instances they were quartered or otherwise incorporated. Another peculiarity of these feudal territorial arms was that, with certain modifications, they were assumed or granted to



- POINTS OF THE SHIELD**
- A. The chief
 - B. Dexter side
 - C. Sinister side
 - D. The base
 - E. Dexter chief
 - F. Sinister chief
 - G. Middle chief
 - H. Dexter base
 - I. Sinister base
 - K. Middle base
 - L. Honour point
 - M. Fesse point



METALS, COLOURS, AND FURS, WITH THEIR CORRESPONDING TINCTURES



DIVISIONS OF THE SHIELD

- A. Party per fesse or & azure
- B. Party per pale arg. & gules
- C. Party per bend azure & or
- D. Party per saltire arg. & gules
- E. Quarterly, ermine & sable
- F. Party per chevron, gules & or



LINE OF PARTITION



MULTIPLICATION AND COMBINATION OF ORDINARIES

- A. Barry of six pieces az. & or
- B. Pale of six pieces arg. & gules
- C. Bendy of eight pieces or & az.
- D. Barry-bendy, gules & arg.
- E. Chevronné, vert. & or
- F. Pale-bendy, arg. & gules
- G. Chequy, or & sable
- H. Lozengy, arg. & az.

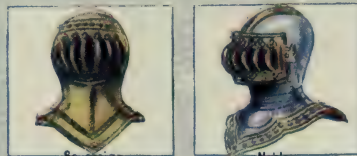


LION CHARGES ON SHIELDS

- A. Rampant
- B. Salient
- C. Sejant
- D. Statant
- E. Passant
- F. Passant Guardant
- G. Passant regardant
- H. Couchant



HONOURABLE ORDINARIES AND SUBORDINARIES

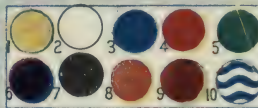


MODERN HERALDIC HELMETS



ENGLISH MARKS OF CADENCY

1. Label borne by eldest son during his father's lifetime
2. Crescent by the second son
3. Mullet by the third son
4. Martlet by the fourth son
5. Annulet by the fifth son
6. Fleur-de-lis by the sixth son
7. Rose by the seventh son
8. Cross Moline by the eighth son
9. Double Quatrefoil by the ninth son



- Roundels.** 1. Bezant. 2. Plate. 3. Hurte. 4. Tortoise. 5. Pomme. 6. Colp. 7. Pellet. 8. Orange. 9. Cuze. 10. Fountain

HERALDRY: THE SCIENCE OF CRESTS AND ARMORIAL BEARINGS ILLUSTRATED

Specially drawn for Harmsworth's Universal Encyclopedia by J. F. Campbell



BARNARDISTON

Azure, a fesse dancetté, ermine, between six cross crosslets, argent



FENWYKE

Per fesse, gules & arg., six martlets counterchanged



BLOUNT

Barry rebulé of six pieces, or and sable



WITTEWRONG

Bendy of six, arg. and gules, on a chief, azure, a bar indented, or



POPL

Per pale, or & az., on chevron between three griffins' heads erased, 4 fleurs-de-lis all counterchanged



OLDFIELD

Or, on a pile, vert, three garbs of the field



LAWSON (of Isell)

Per pale, arg. and sa., a chevron counterchanged



CELL

Per bend, az. and or, three mullets of six points in bend, pierced and counterchanged



WILLIAMS (of Llangibby)

Gyronny of eight, ermine and sable, a lion rampant, or



FLETCHER

Arg., a saltire, engr. gu., between 4 roundels of 2nd, each charged with a pheon of the field



GUISE

Gules, seven lozenges, vaire, three, three, and one



WILLOUGHBY

Or, two bars, gules, each charged with three water-bougets, arg.



SPENCER

Quarterly, az. & gu.; in 2nd & 3rd quarter a fret, or; over all, a bend sa. charged with 3 escallops, arg.



ACTON

Quarterly, per fesse indented, argent & gules; in first quarter a Cornish chough, sable



DORMER

Az., ten billets, or, 4, 3, 2 & 1; on a chief of second, a demi-lion issuant, sa.



HOLLES

Erm., two piles, issuing from ramp, or; on a chief, arg., a mullet; Per saltire, or & arg., on a upper part of dexter & sinister gules, between 3 torteaux; 2nd saltire sable, 5 fleurs-de-lis sides of shield, & joining in centre and 3rd, gules, two chevrons within a bordure, arg.



SMITH (of Isleworth)

Quarterly, 1st & 4th, az., a lion; 2nd & 3rd, arg., a chevron gules, between three cross crosslets fitchés sable, all within a double tressure flory and counter-flory of the second



HAWKINS

Quarterly, 1st & 4th, az., a lion; 2nd & 3rd, arg., a chevron gules, between three cross crosslets fitchés sable, all within a double tressure flory and counter-flory of the second



WYVILL

Arg., three chevrons interlaced, vaire, a chief, or



ROBERTS

Arg., six pheons, sa., on a chief of second, a greyhound courant of first porged, or



JOHN DE BEAUMONT

Az. semé-de-lis & lion rampant, or, over all a bend gobony arg. & gules



VISCOUNT DOWNE

Or, on a bend cotised sa., three annulets of the field



MACKWORTH

Party per pale indented, sable and ermine, a chevron gules, fretty or



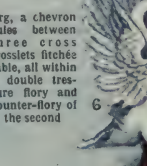
WM. DE COURTENAY

Or, three torteaux, on a label of three points az., as many mitres arg.



ROBERT DE VERE

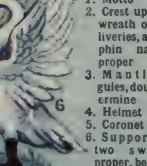
Quarterly 1st and 4th, az., 3 crowns or, within a bordure arg.; 2nd & 3rd, quarterly gules and or, in first quarter a mullet argent



Arg., a chevron gules between three cross crosslets fitchés sable, all within a double tressure flory and counter-flory of the second



Arg., a chevron gules between three cross crosslets fitchés sable, all within a double tressure flory and counter-flory of the second



Arg., a chevron gules between three cross crosslets fitchés sable, all within a double tressure flory and counter-flory of the second



Arg., a chevron gules between three cross crosslets fitchés sable, all within a double tressure flory and counter-flory of the second



ARMORIAL BEARINGS OF SIR ARCHIBALD KENNEDY, MARQUESS OF AILSA.

- Motto
- Crest upon a wreath of his liveries, a dolphin naiant proper
- Mantling gules, doubled ermine
- Helmet
- Coronet
- Supporters: two swans proper, beaked and membered gules

JOHN DE HASTINGS, K.G.

(Earl of Pembroke)
Quartering De Hastings & De Valence & impaling France ancient and England quarterly

HERALDRY: ITS PRINCIPLES EXEMPLIFIED IN FAMILY COATS OF ARMS

Specialty drawn for Hornsworth's Universal Encyclopedia by J. F. Campbell

sub-feudatory families or families related to the great chief. A good illustration of this is seen in the golden wheatheaves of Chester, borne by the house of Meschines, and found on the shields of a large number of old Cheshire families, including the Grosvenors.

Until well into the 13th century, many leading feudal families adhered very imperfectly to the idea of heredity in the matter of coat-armour. These matters were in a state of flux. Not only was there often a considerable diversity among different branches of a family, even among brothers, but also between father and elder son, while the head of the family often changed his bearings. Occasionally this was due to the adoption of other arms, or additional charges, as the result of matrimonial or feudatory alliance.

Tinctures differed, and so did charges. This was partly with the deliberate design of differentiating between the chiefs and minor leaders, and gave rise to most interesting systems of changing within a narrow circle, so as to produce compositions somewhat distinct yet preserving a family likeness. Good instances are the early arms of the Nevills in the reigns of Edward II and III, of the Zouches in the 14th century, and of the Cobhams. But the system gave rise to some abuses and much confusion, thus calling urgently for regulation by the heralds.

Armorial Complication

As time advanced the work of the professional armorists, though preventing chaos, introduced many complications, doing away with the charming simplicity of the early feudal days. These restrictions and complications went on steadily increasing, until in the 16th and 17th centuries the original beauty and direct appeal had vanished, too often under a mass of meaningless absurdities. Moreover, as blazoning and marshalling of arms became more complicated, so did the dexterity and bold spiritedness of the heraldic artist diminish.

This deterioration of the science and the art of heraldry persisted side by side through the Commonwealth, the reigns of the Stuarts, and the era of the House of Hanover, into and past the mid-Victorian period. Then came a revival of heraldry, a harking back to the feudal examples, which gave birth to a painstaking, competent school of heraldic artists.

In blazoning, heralds distinguish four main divisions—the field (the surface of the shield or banner); tinctures (colours, metals, and

furs); charges (animated creatures, celestial bodies, flowers and plants, inanimate objects and conventional figures placed as distinguishing ornaments on the field); and the externals, which include the crest and badge, helmet, coronet or cap, supporters, mantling and distinguishing devices.

Degrees of Coat-armour

In coat-armour ten degrees were recognized. 1. Arms of dominion, belonging to a sovereign state. 2. Arms of pretension, borne in their entirety, in a shield of pretence over the paternal arms, or quartered, by a prince claiming dominion over another state. 3. Arms of community, belonging to religious, charitable, and scholastic establishments, corporate bodies, including cities and boroughs, chartered guilds and companies. 4. Arms of patronage, or arms of community and office borne by certain holders of office, such as bishops, abbots, heralds. 5. Arms of succession, borne by inheritors and grantees of fiefs and manors. 6. Arms of assumption, or arms of a vanquished foe assumed by the victor (more often part of the arms or crest were assumed). Some heralds made another division for arms of territorial assumptions, or those borne by a non-ruling claimant to a territory, which are practically identical with No. 2. 7. Paternal arms, descending from father to children, and in certain cases hereditary from the maternal side. 8. Arms of alliance, or the arms of a wife, borne in an escutcheon of pretence (a small central over-all or *surtout* shield) if she is an heiress, or impaled otherwise; the arms of the heiress being quartered by the children with their paternal arms. 9. Arms of adoption, borne by strangers in blood by virtue of a gift by will or other deed, for which sanction by the sovereign is required. 10. Arms of concession, or arms of honourable augmentation, being complete coats of arms, parts of coats of arms or special charges or devices (crests or supporters) granted by the sovereign as a special favour.

The field or shield was plotted out into various sections to facilitate blazoning. The left side, as viewed by the spectator, is called the *dexter*, the right the *sinister*, it being assumed that the shield is borne by the owner. The top is the chief, or in chief; the middle the fess point; the space between this and the chief is the honour point; and the bottom part the base.

As regards tinctures, gold and silver, together with the five colours, red, blue, green, black, and purple, to which a dark blood-

red and orange were later added, were universally recognized; also ermine and those quaintly conventionalised other furs, vair and potent. It was generally laid down that metal should not rest on metal, nor colour on colour, but there are numerous exceptions, especially on the Continent. The doctrine that a field must be charged has also been frequently ignored. Apart from the celebrated plain, uncharged, ermine shield of the ancient duchy of Brittany, there are many other plain tinctured shields. It must be said that these, without the accompaniment of a distinctive crest, were rather a negation of the true aims of heraldry.

First among the great body of charges come certain conventional or geometric figures, broad bands, crosses, whirls, called ordinaries. These are spacious and very properly may bear other charges. In early heraldry overloading was avoided, yet the heraldic artists always endeavoured to fill the shield or banner. Thus if a king of England bore a shield broad at the top and narrowing to a point at the base, the topmost lion was a big, bold beast, the one beneath a little smaller, and the third a tiny animal.

These fundamental ideas of the design of a shield and the need to fill space appropriately had their influence on blazoning. Thus, three charges on a shield, unless special directions are given, are borne two above and one below. To do otherwise is to give a blazon *mal ordonné*, as the French say.

Bearing of Crests

A coat of arms may be complete without a crest. As a matter of fact, crests were either borne by the prescriptive right of long usage, or were the subject of specific mention in grants, the original assumption being that they should be borne only by warriors, or at least by those entitled to levy or lead men-at-arms. Consequently, no woman except a sovereign princess was entitled to use a crest.

Apparently in the course of visitations, applicants who considered a crestless armorial shield incomplete, or those anxious to advance pretensions, put forward old family badges or personal devices and got them recognized by the complainant presiding herald as genuine crests. This abuse, and the bad taste of the heralds, accounts for so many absurd figures being employed as crests, many of which would be quite impossible ornaments to helmets intended for personal wear, which, of course, is the test of the genuinely old.

The use of supporters came in fairly late; they were a matter of accidental growth, mere external ornamentations, but speedily recognized as of value in denoting alliance and territorial dominion. For very long they were only partially admitted as hereditary. Regal heraldry, both British and Continental, shows an extraordinary gallery of supporters used by succeeding sovereigns, one king often employing three or four, differing from those of his predecessor, though usually referring to some matrimonial or other alliance.

In later practice supporters are supposed to be borne only by sovereigns, princes, peers and their eldest sons, and those enjoying the right by special grant—a form of augmentation. But some old families lay claim to them by prescriptive right, and the baronets of Nova Scotia long asserted as a special privilege attaching to their rank the right to use supporters. From the 16th century onwards English heralds made it common form to grant supporters in connexion with arms of community, particularly those given to craft guilds and chartered companies.

Differing Practices

Heraldic practice differs in many details in most countries. Thus the methods of differencing arms for cadency in England and Scotland are very dissimilar, and each varies from Continental rules. Ideas as to tinctures and the charging of charges also vary. The style of art is also largely influenced by locality.

Many of the rules mentioned above, and others too technical to be given here, were undoubtedly useful in preventing confusion and making intelligent record possible. Unfortunately the multiplication of rules begat a race of uninspired heralds who blazoned by rule of thumb and thought that piling on of detail and over-elaboration in marshalling tended to increase dignity, though it really detracted from noble simplicity and led to a succession of worthless follies.

Heraldry meant much in the days when armorial bearings and other heraldic insignia appeared on signets and more formal seals, glittered in jewelled glass windows, glowed on tapestried or painted walls, even on personal garments, marked the possession of treasured books, and told graphically on the illuminated genealogical scroll or spreading family tree the story of cherished alliances. It played a useful part, appreciated by historian and antiquary and no less by the artist. Employed with discretion, it still fills a place, as

helpful to the family annalist as it is to the decorative artist of sound taste.

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Heralds' College. British corporation for the regulation of all matters connected with heraldry. See College of Arms.

Hérat. City of Afghanistan, sometimes called the key of India from its strategic position. It is

the capital of the prov. of the same name, and is situated on the Hari Rud, at an alt. of 3,000 ft., about 400 m. almost due W. of Kabul, and 60 m. E. of the Russian and Persian frontiers. Founded by Alexander the Great, it is a great centre of roads. It stands in a beautiful and very fertile district, and manufactures fine carpets and silks. Pop. 40,000.

Hérault. River of France. Rising on the slopes of Mont Aigoual, in the Cévennes, it flows first S. and then S.W. along the foot of the S. buttress of these mts., and issues into the Gulf of Lyons near Agde. The chief towns on its banks are Valleraugue (Gard dept.), Aniane, Gignac (Hérault dept.). Length, 78 m.

Hérault. Maritime dept. of France. It adjoins the depts. of Aude, Tarn, Aveyron, and Gard, and its coast, consisting chiefly of a string of sandy lagoons (*étangs*), is on the N.W. of the Gulf of Lyons. It thus formed part of the old prov. of Languedoc. Towards the sea the ground slopes gently, but in the N.W. rise the Monts de l'Espinouse and Monts Garrigues, the southern flanks of the Cévennes. The principal rivers are the Hérault and Orb; part of the Canal des Étangs runs through the dept. from Aigues Mortes (Gard) to Cette, the Canal du Midi continuing to Agde, Béziers, and into the dept. of Aude.

The vineyards are the most important commercial feature of Hérault, and there are several important mineral workings, e.g.

copper, lead, and building stone. Salt is produced from the neighbourhood of the lagoons, and Cette has a large fishing fleet. The most important towns are the capital, Montpellier, Lodère, Bédarieux, Pézenas, Ganges, and Frontignan. Its area is 2,402 sq. m.

Herb. Plant whose stem, from the absence of woody tissue, dies to the ground annually. Herbs, however, may be annual, biennial, or perennial in duration. Annuals spring from the seed, flower, fruit, and die all within one season. Biennials during their first season accumulate a store of food in an underground rootstock which is expended the second season in the



Herat, Afghanistan. The old citadel seen from the city walls

production of an aerial stem, flowers and fruit; then they die. Perennials produce annual stems in succession during an indefinite number of years, such stems dying in autumn after their valuable contents have been withdrawn into an underground rootstock, tuber, bulb, or corm. The word is also used, in the plural, by gardeners to indicate those plants, whether herbs or shrubs botanically, which are employed for flavouring in cookery, such as horehound, mint, parsley, rue, sage, tansy, and thyme. A herbalist is one who deals in herbs, especially those useful for medicinal purposes. Before the medical profession reached its present ubiquity, many persons resorted to herbalists in cases of illness. A herbal is a book in which plants and names are described. See Botany.

Herbaceous Plants. Plants wholly of soft material, without woody stems. They are either annual, produced from seed and dying within the same year; biennial, produced from seed one year and dying the next; or perennial, when the rootstock survives in the ground, while the season's growth dies down before the winter. See Gardening.

Herbarium (Lat.). Collection of dried plants attached to loose sheets of paper, arranged in genera, and these again grouped in the natural orders. In making such a collection, care should be taken to select typical and perfect specimens, showing all the parts of the plant, root, stem, leaves, flowers, and fruit. They are dried, under increasing pressure between many changes of fairly absorbent paper, before they are mounted, and then attached by narrow strips of gummed paper or by cotton stitches. The cabinet in which they are stored should not be placed against an outer wall, or the specimens will be attacked by mould. Camphor or naphthalene should be freely used in the cabinets, which should be frequently inspected, to keep away destructive insects. See Botany.

Herbart, JOHANN FRIEDRICH (1776-1841). German philosopher and educationist. He was born at Oldenburg, May 4, 1776, and while a tutor in Switzerland, in 1797, made the acquaintance of Pestalozzi, whose system aroused in him an interest in education. In 1805 he became professor of philosophy at Göttingen, and in 1808 succeeded Kant at Königsberg. The result of his educational theories was seen in the foundation of a pedagogical seminary. In 1833, having incurred the displeasure of the Prussian authorities by his advanced ideas, he returned to Göttingen, where he died Aug. 14, 1841.



J. F. Herbart,
German philosopher

At first a follower of Fichte, Herbart later found himself at variance with him on the question of human freedom. He denied that man was free and independent of circumstances, and reverted to Kant's theory that behind the world of sense there were a number of real things, unaffected by the operations of the mind. These "reals," resembling the atoms of Democritus and the monads of Leibniz, are simple elements, differing in quality, which act and react upon one another in a struggle for self-preservation, and thus originate the physical world. The soul is one of these reals, whose reactions give rise to presentations which become ideas. These ideas act as forces striving for possession of the threshold of consciousness.

Herbart was the first to raise education to the dignity of a science. His views have had much influence,

especially in America, where there is a Herbart Society which publishes a year-book. See *The Secret of Herbart*, F. H. Hayward, 1907.

Herbert. Masculine Christian name. Of Teutonic origin, it means bright warrior. It was used by the Franks, variants being Charibert and Haribert, and was brought into England by the Normans.

Herbert. Name of a noted English family, now represented by the earls of Pembroke, Powis and Carnarvon, and various other nobles. The family sprang from a certain small landholder in Monmouthshire who lived in the time of Edward III. One of his descendants became, about 1430, the owner of Raglan Castle, and his sons definitely took the name of Herbert in place of their Welsh name. One of them, Sir William Herbert, became lord of Pembroke, and one of the chief defenders of the marches against the inroads of the Welsh. In 1468 he was made earl of Pembroke. He lost his life in 1469, during the Wars of the Roses, and his earldom died out in 1491.

The first earl had an illegitimate son Richard, who was made marquess of Powis. From him sprang various branches of the family, including those represented by the earl of Carnarvon and the earl of Powis. His son William was made earl of Pembroke in 1551, a title since held by his descendants. To it the earldom of Montgomery was added in 1605. The earl also holds three baronies of Herbert. Herberts held other titles now extinct, including the earldom of Torrington and the viscounty of Ludlow. See Pembroke, earl of; Powis, earl of.

Herbert, GEORGE (1593-1633). English poet and divine. Born in Montgomery, Wales, April 3, 1593, younger brother of Lord Herbert of Cherbury, he was educated at Westminster School and Trinity

College, Cambridge. He became fellow, 1616, and was public orator, 1619-27. Disappointed of court preferment under James I, he turned to the study of divinity. He was prebend of Leighton Bromswold, Hunts, with the stall of Leighton Ecclesia in Lincoln Cathedral, 1626, restored the church of S. Mary, Leighton; was rector of Fuggleston with Bemerton, near Salis-

bury, Wilts, 1630-33, where he repaired the church (S. John's) and rebuilt the parsonage. He married Jane Danvers, of Baynton, Wilts, 1629, and, dying of consumption, was buried in Bemerton church, March 3, 1633. The church at Bemerton was restored in 1866.

Herbert's saintly life at Bemerton is reflected in the manual, *A Priest to the Temple*, or the



George Herbert,
English poet
From a print

Country Parson, His Character and Rule of Holy Life, first printed in 1652. His chief work, *The Temple, Sacred Poems and Private Ejaculations*, planned in reference to

church architecture, and packed with thought and precept, was first printed 1633, and ran through two editions in that year; by 1670, 20,000 copies had been issued. The MS., now in the Bodleian, was given by Herbert, on his death-bed, to his friend, Nicholas Ferrar, of Little Gidding.

Read by Charles I in prison and praised by Crashaw, Henry Vaughan, Baxter, and Coleridge, *The Temple* ranks with the best religious verse in the language. The Pilgrimage has been described as Bunyan's *Pilgrim's Progress* in miniature. The conceits in the verse are attributed to the influence of Herbert's friend, John Donne. Herbert found his chief relaxation in his devotion to music.

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George Herbert. The old church at Bemerton, near Salisbury, of which he was rector, and where he was buried in 1633

Prith

Herbert, Sir Robert George Wyndham (1831-1905). British civil servant. Born at Brighton, June 12, 1831, grandson of the 1st earl of Carnarvon, he was educated at Eton and Balliol College, Oxford, and began his career as a private secretary to Gladstone. In 1859 he went to Queensland as private secretary to the governor, was made premier of the new colony a year later, and remained there until 1867. He then entered the board of trade, but in 1870 was transferred to the colonial office, where he was permanent under-secretary, 1871-92. He was knighted in 1882, and after his retirement served as agent-general for Tasmania. He died at Ickleton, Cambs, May 6, 1905.

Herbert of Cherbury, Edward Herbert, 1st Baron (1583-1648). English philosopher, historian, and diplomatist. Born at Eyton-on-Severn, near Wroxeter, March 3, 1583, he went to Oxford when a boy of fourteen. He afterwards travelled much on the Continent, where he made the acquaintance of Isaac Casaubon and Constable Montmorency, and gained the reputation of a skilful and fearless duellist and man of pleasure. In 1614 he fought with distinction under the prince of Orange in the Netherlands and was twice ambassador to Paris. He was recalled owing to a dispute with Constable de Luyves as to the treatment of the French Protestants, and a second time in connexion with the

proposed marriage of Henrietta Maria of France and Prince Charles. His services were rewarded with an Irish and then an English peerage as Baron Herbert of Cherbury. At first a supporter of the



Lord Herbert of Cherbury, English philosopher

From a contem. portrait

royalist party, he subsequently went over to the parliamentarians. He died in London, Aug. 20, 1648.

Herbert of Cherbury is usually called the founder of English deism, a system of natural religion. He assumes that all men are alike in the possession of certain common notions, in which the fundamental truths are represented. The five common notions of natural religion are: the existence of a supreme being; the duty of worshipping him; virtue and piety are the most important elements of worship; the necessity for repentance of sins; a future life with

rewards and punishments. Revelation is possible to individuals, but must not be opposed to these five notions. Natural instinct is the faculty whereby the common notions as to the relations of things are apprehended and applied without the process of reasoning. His chief work is *De Veritate* (On Truth), 1624.

Herbert of Lea, Sidney Herbert, Lord (1810-61). British politician. Born at Richmond, Sept. 16, 1810, a younger son of the 11th earl of Pembroke, he was educated at Harrow and Oriel College, Oxford. He entered Parliament as Conservative M.P. for S. Wilts in 1833, and retained the seat till 1861. In 1834 he was made



Lord Herbert of Lea, British politician
After G. Richmond

secretary to the board of control, and in 1841 secretary to the admiralty; there he remained until in 1845 he entered Sir Robert Peel's Cabinet as secretary at war. Still a Peelite, he returned to the same office in 1852, resigning in 1855 on the inquiry into the failure of the army organization in the Crimea. He returned to the war office in 1859, but was in failing health, and in 1861 he resigned, having just been made a peer. He died Aug. 2, 1861. Two of his sons became in turn earls of Pembroke.

Herberton. Town of Queensland, Australia. It stands 3,000 ft. above sea level, 80 m. by rly. S.W. of Cairns, its port. The chief tin-mining centre of N. Queensland, it produces also copper, wolfram, and other minerals. Pop. 1,500.

Herbertshöhe. Former name of the port in Neu Pommern (now New Britain), Bismarck Archipelago, now known as Kokopo (*q.v.*). Formerly the capital of Germany's Pacific colonies, it was superseded in 1910 by Rabaul, 14 m. N.W. It was captured by an Australian force in Sept., 1914. See Bismarck Archipelago; Papua.

Herb Paris (*Paris quadrifolia*). Perennial herb of the natural order Liliaceae. It is a native of Europe and N. and W. Asia. It has a stout white, creeping rootstock, a round stem, bearing near its summit a single whorl of four large oval leaves, and above them the solitary flower, consisting of four large green sepals and four very narrow yellow petals. The eight or more stamens are continued as long points beyond the anthers. The ovary is purple, very large, and

shining, and develops into a black four-celled berry. The flower has an offensive odour which attracts flies. The plant resembles *Trillium*.



Herb Paris, foliage and flowers

Herb Robert (*Geranium robertianum*). Soft, hairy annual herb of the natural order Geraniaceae. It is a native of Europe, N. Africa, and W. Asia. Its leaves are divided into five leaflets, which are again finely lobed and divided, smelling disagreeably when bruised (hence its local name of Stinking Bob). The flowers are pale purple,



Herb Robert, leaves and flowers

streaked with red, produced all through the season. The whole plant often turns red.

Herculaneum (Gr. *Herakleion*). Ancient Italian coast town, between Naples and Pompeii, at the foot of Mt. Vesuvius. Originally Oscan, it was occupied in turn by Samnites and Etruscans, and was finally conquered by the Romans. In Nero's time it was greatly damaged by an earthquake, and in the autumn of 79 was totally destroyed, together with Pompeii, by an eruption of Vesuvius. The villages of Portici and Resina were built over the site. In 1719, during the sinking of a well, parts of the ancient city were discovered. Since then excavations have been carried on at intervals, but with difficulty, by means of tunnels, propped up to prevent the earth collapsing.

The architectural remains are inferior, but the works of art



Herculaneum. General view of the excavations looking along one of the streets of the buried Roman city

superior, to those of Pompeii. Among the former, a theatre, a temple, a luxuriously appointed private house, and a barber's shop, the latter containing numerous trade requisites, are the most interesting. Of the works of art, the pictures of Theseus and the Minotaur, the statues of Nero and Germanicus (nine feet high), of two members of the Balbus family, and a sleeping Faun, deserve mention. Great hopes were once aroused by the discovery, in a country house outside the walls, of a large collection of papyrus rolls, but they proved of little value. See Vesuvius; consult also Herculaneum C. Waldstein and L. K. H. Shoobridge, 1908.

Hercules. Northern constellation situated between Lyra and Boötes. One of the Ptolemaic constellations, it contains several double and variable stars, and the globular cluster Messier 13.

Hercules (Gr. *Heraklēs*). Hero in Greek classical mythology. He was the son of Zeus by Alcmenē, wife of Amphitryon, king of Thebes. The jealous Hera, wife of Zeus, sent two serpents to destroy the baby Hercules in his cradle, but the infant strangled them both with his hands. Receiving the hand of Megara, daughter of the king of Thebes, as reward for having slain Erichon, king of Orchomenus, the oppressor of the Thebans, he had by her several children, whom, driven mad by his old enemy Hera, he slew. After being purified of this deed, Hercules was instructed by the Delphic oracle to go to Tiryns and serve Eurystheus, the king, for twelve years.

It was for Eurystheus that he performed the celebrated Twelve Labours: (1) The slaying of the Nemean lion, which he strangled

with his own hands; (2) The destruction of the many-headed Hydra of Lerna, a swamp near Argos; (3) The capture alive of the Arcadian stag, with golden antlers and brazen feet; (4) The capture alive in a net of the Erymanthian boar; (5) The cleansing of the stables of Augeas, which he carried out in a night by turning the rivers Alpheus and Peneus through them; (6) The destruction of the Stymphalian birds, monsters with brazen beaks and claws, and feeders on human flesh; (7) The capture of the mad bull which Poseidon had sent to Minos, king of Crete; (8) The capture of the man-eating horses of Diomedes, king of the Bistones in Thrace; (9) The taking of the girdle of Hippolytē, queen of the Amazons; (10) The seizure of the oxen of Geryon, the three-headed monster of the island of Erytheia; (11) The taking of the three golden apples from the garden of the Hesperides; (12) The bringing of Cerberus, the three-headed dog of Hades, from the lower world.

Besides these labours Hercules performed many other deeds. In the war between the gods and the giants he assisted Zeus to victory; he accompanied the Argonauts in the expedition in quest of the Golden Fleece; and he rescued Hesione, daughter of Laomedon, from a sea-monster. Going mad a second time, he murdered his friend Iphitus. Ordered by the Delphic oracle to work three years for wages as an atonement and to give the wages to Eurystus, father of Iphitus, he entered the service of Omphale, queen of Lydia. On a visit to Calydon he won the hand of Deianira, who, becoming jealous, sent him a poisonous shirt, steeped in the blood of the centaur Nessus. Hercules put the shirt on and the

poison caused him such pain that he tore strips of flesh from his body in his attempt to pull off the shirt. In this condition he was brought to Trachis, and made arrangements for his own funeral pyre. When the pyre began to burn, a cloud descended upon it in which Hercules was borne away to Olympus. The worship of Hercules was first introduced to Greece by the Phoenicians, the original object of adoration being the Babylonian sun god Baal, who goes through twelve labours as he goes through

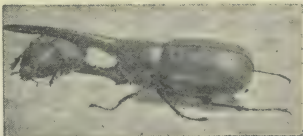


Hercules. Antique colossal statue known as the Farnese Hercules
Naples Museum

the twelve signs of the Zodiac. In Italy the worship of the Greek Hercules was combined with that of an old Italian hero. *Pron.* Her-cu-leez. See Greek Art.

Hercules, PILARS OF. Ancient name for the rocks forming the entrance to the Mediterranean Sea, i.e. Calpe (Gibraltar) in Europe, and Abyla (Ceuta) in Africa. Various legends describe them either as torn asunder by Hercules to admit the Atlantic or as joined together to keep out the ocean monsters.

Hercules Beetle. Large species of beetle. Belonging to the genus *Dynastes*, it is found in the tropical



Hercules Beetle. The male carrying his mate between his horns

districts of America. It is often between five and six inches long; and the male has a vertical pair of large horns which somewhat suggest the pincers of a crab.

Hercynian Forest. In ancient geography, a vast forested mountain region N. of the Danube. Caesar in his commentaries on the Gallic war says it took nine days to cross, while in some parts 60 days' march did not avail to reach its limits. It seems to have included the modern Switzerland, the entire Alpine mass, Transylvania, and part of Russia.

Herd Book. Publication issued annually by the special societies interested in the different breeds of cattle and pigs. It registers the pedigree stock of members, defines the points and settles the method of judging. See Cattle.

Herder, JOHANN GOTTFRIED VON (1744-1803). German critic and poet. He was born at Mohrungen, East Prussia, Aug. 25, 1744,

of humble parentage. After early struggles he managed to enter Königsberg University, where he was much influenced by Kant. He became a school teacher and pastor at Riga in 1764, and thanks to Goethe's interest became first preacher at Weimar, 1776. He had already published strong criticisms of Lessing's *Laocoon*, in *Kritische Wälder* (Critical Forests), 1769, and other writings.

Herder occupied a dominating position among the literary critics of his period. His love for the songs of the people as supporting his theory that poetry was the natural language of man bore fruit in his *Stimmen der Völker in Liedern* (Voices of the Nations in Song), 1778-79, and other works. One of his chief works is the *Ideen zur Philosophie der Geschichte des Menschheit* (Ideas on the Philosophy of the History of Mankind), 1784-91, Eng. trans. 1800. It is notable for its anticipation of the evolutionary theory. In 1789 Herder was made vice-president of the consistory at Weimar. He died at Weimar, Dec. 18, 1803. See Herder and his Times, H. Nevins, 1884.

Herdman, ROBERT (1829-87). Scottish painter. Born at Rattray, Perthshire, he studied at the Trustees' Academy, Edinburgh. His best work was in portraiture. Among his sitters were the countess of Strathmore, 1876; Sir George Harvey, 1874; Thomas Carlyle, 1875; Principal Tulloch, 1879; and Sir Noel Paton, 1879. He also produced some delicately rendered historical subjects. He became

A.R.S.A., 1858, and R.S.A., 1863. Herdman died in Edinburgh on Dec. 31, 1887. See Antiquary; Deans, Effie.

Herdman, SIR WILLIAM ABBOTT (1858-1924). British scientist. Born in Edinburgh, Sept. 8, 1858, he

studied at the academy and university there. His chief subject of study was zoology, and having been on the Challenger expedition, he was for a short time a demonstrator of zoology in Edinburgh. In 1881 he was made professor of natural history at Liverpool University and began his work of investigating the ocean. He helped to found a marine biological station at Port Erin, Isle of Man, while for the British government he investigated the pearl fisheries of Ceylon. Herdman served the British Association as general secretary, while in 1920 he was its president. His many honours include a F.R.S. and his writings *The Fauna of Liverpool Bay*, 1896-1900. In 1919 he became the first professor of oceanography at Liverpool. He died, July 21, 1924.

Heredia. Prov. and town of Central Costa Rica, Central America. The surface is mountainous, the highest point being the peak of Desengano, in the centre of the prov., which attains an elevation of 6,310 ft. The uplands afford splendid pastures for the rearing of cattle, and the fertile valleys produce much coffee, which is exported. Pop. 72,736.

Heredia, the capital of the prov., stands on a plateau at an alt. of

3,785 ft., about 5 m. by rly. N. of San José. It is a well-planned town, with wide streets, substantial buildings, and up-to-date conveniences, including electric light, etc. Pop. 9,328.

Hérédia, JOSÉ MARIA DE (1842-1905). French poet. Born at Fortuna Capeyre, Santiago de Cuba, Nov. 22, 1842, of mixed French and Spanish origin, he was educated in Paris, and early became a disciple of Leconte de Lisle, and a member of the Parnassian school of poets. His sonnets, collected under the title of *Les Trophées*, 1893, place him among the greatest sonnet-writers. He died Oct. 3, 1905.

Heredia, PEDRO and ALONSO DE. Two brothers who conquered Colombia for Spain between 1530 and 1545. Pedro was the founder of the city of Cartagena.

Hereditament (late Lat. *hereditare*, to inherit). Term of English law. It refers to property that can be inherited, i.e. which goes to the heir and not to the personal representative. The term is wider than the term real property. It includes titles, advowsons, rights of common, rights of way, certain offices, e.g. the office of earl marshal of England is hereditary in the family of the dukes of Norfolk, dignities, e.g. peerages and baronetcies, franchises, e.g. markets and ferries, pensions, annuities, and rents. Some of these, such as rights of common and rents, issue out of land; others are purely personal, as peerages and pensions.

HEREDITY: INHERITED CHARACTERISTICS

J. Arthur Thomson, Regius Prof. of Natural History, Aberdeen

The group of articles to which this belongs includes Biology; Eugenics; Evolution; Life; Mendelism; Sex. See the biographies of the great biologists and naturalists, e.g. Darwin; Galton; Lamarck; Wallace. See also Cell; Family; Instinct

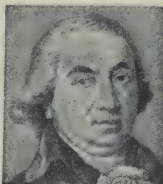
Heredit is the vital or organic relation between successive generations which secures the general persistence of characteristic resemblances between offspring and their parents, and yet allows new ones to emerge. Some use the word to include all the causes or factors which determine the resemblance between individuals who are related to one another; others say that heredit is the fact that like tends to beget like; and others that heredit is the past living on in the present. But it must be understood that heredit is no mysterious force

or principle; it is the flesh and blood linkage, the germinal continuity, binding one generation to another. In mankind, one generation may influence the next by tradition and institutions, by literature and art, and in similar ways which form the social heritage. This usage would leave the term "natural inheritance" for all that is handed on by means of the germ-cells, namely the egg-cell and the sperm-cell.

In mammals, where, with few exceptions, the unborn offspring is carried by the mother, the natural inheritance of the offspring may be



Sir W. A. Herdman,
British scientist
Russian



J. G. von Herder,
German critic



J. M. de Hérédia,
French poet

influenced by peculiarities in the nurture which is available for it. The same is true in all cases where the parents, plants as well as animals, nurture the offspring.

An important peculiarity in the nurture, whether favourable or prejudicial, may produce a change or modification in the offspring. This change is not part of the hereditary nature; it is conveniently referred to as a result of some peculiarity of nurture. The natural inheritance includes all that the creature is or has to start with, when it is in the germ-cell stage of its being, in virtue of its relation of organic continuity with the germinal material of its parents and ancestry.

Development is the realization of the natural inheritance, the making actual that which lies invisible and latent in the fertilised egg-cell. In figurative language development may be called cashing the inherited legacy and trading with it. Normal development implies appropriate nurture, a succession of chemical and physical stimuli due to food, oxygen, humidity, warmth, etc., which serve to evoke the potentialities of the germ and the embryo.

Peculiarities in this nurture may divert the development from its normal course, and in a lineage whose natural inheritance is good there may be an outcrop of abnormalities, because of quite extrinsic defects of nurture, such as lack of food or very low temperature. What an organism becomes is primarily dependent on the interaction of the hereditary nature and the nurture that is available.

The natural inheritance has its material basis in the germ-cells—the ovum or egg-cell and the spermatozoon or sperm-cell. Whatever be the precise nature of the germ-cells, they are the exclusive vehicles of the inheritance. Although we cannot in any way picture it, the heritable qualities or the organization which makes these qualities possible must be entirely contained within the germ-cells, which are usually microscopic.

The Human Germ-cell

The human ovum is only about 0.2 of a millimetre in diameter, and many ova measure not more than a few thousandths of a millimetre. But the germ-cells are not to be thought of as ordinary cells; they are individualities in a unicellular state, rich in initiatives. The fertilised ovum contains in some mysterious implicit state all the potentialities of the organism into which in favourable circumstances it will develop. But it is possible to go further. Inside each germ-cell there is a kernel or nucleus, as

is usual in cells, and inside the nucleus there is a definite number of readily stainable rodlets or granules, called chromosomes. Many facts point to the conclusion that although the general substance (or cytoplasm) of the germ-cells counts in inheritance, the chromosomes are the special bearers of the factors or determiners of the hereditary qualities, or, at least, of many of them.

Except in cases of virgin birth or parthenogenesis, where ova develop without fertilisation, as in summer green-flies, and many wheel-animalcules, the inheritance must be dual. It is borne by a spermatozoon contributed by the male parent and by an ovum contributed by the female parent, and these two cells unite in an intimate and orderly way to form the fertilised ovum. There are, indeed, many cases where the parents have both egg-producing and sperm-producing organs—ovaries and testes—thus common animals like snails, earthworms, and leeches are hermaphrodite—but even then cross-fertilisation is the rule and the inheritance is dual.

Duality of Inheritance

Very rarely does an animal fertilise its own eggs; this autogamy, as it is called, is illustrated by some tapeworms and flukes. In the vast majority of cases the inheritance is dual, and the number of chromosomes contained in the two kinds of germ-cells is typically the same. As the egg-cell is usually much larger than the spermatozoon, the maternal parent contributes more of the initial building-material or formative protoplasm; the egg is often provided with a nutritive yolk.

On the other hand, the spermatozoon introduces into the egg-cell a minute body known as the centrosome, which plays an important part in the subsequent cleavage or segmentation of the fertilised egg. In recognizing the fact that the inheritance is typically dual, it must be noted that the paternal and maternal characteristics are not likely to find equal expression in the development of the offspring.

A distinction must be drawn between the germinal constitution—the natural inheritance contained in the fertilised egg-cell—and the expression of the inheritance in the development of the offspring. Characters often lie latent for one generation and find expression in the next. Again, while the inheritance is dual, it is in another aspect multiple, since the offspring may exhibit ancestral characters not expressed in the parents.

Statistical inquiries as to the in-

heritance of stature and other qualities in man, and as to coat-colour in Basset hounds, led Sir Francis Galton to his Law of Ancestral Inheritance, according to which the two parents between them contribute, on the average, one-half of each inherited faculty, each of them contributing one-quarter of it; the four grandparents contribute between them one-quarter, or each of them one-sixteenth, and so on backwards. Prof. Karl Pearson has altered Galton's series from 0.5, 0.25, 0.125, etc., to 0.6244, 0.1988, 0.0630, etc., but the general idea remains that the average contributions made by grandparents, great-grandparents, etc., diminish in a precise ratio according to the remoteness of the ancestors.

Law of Filial Regression

A correlated generalisation is known as the law of filial regression, which means that the offspring of exceptional parents tend on the average to approximate (up or down) to the mean of the general population. To take Prof. Karl Pearson's instance, with a collection of fathers of stature 72 ins., the mean height of their sons will be 70.8; with a collection of fathers of 66 ins., the mean height of their sons will be 68.3—in both cases an approximation towards the mean of the general population.

These two generalisations are statistical average conclusions, not individual physiological conclusions, but they do not appear to apply to sharply defined non-blending characters, which exhibit what is called Mendelian inheritance. Nor is it clear that the data utilised were sufficiently homogeneous, for peculiarities or modifications directly due to peculiarities of individual nurture must not be mixed up with peculiarities due to intrinsic germinal variations. Caution is necessary in dealing with these statistical conclusions.

The largest fact in regard to heredity, and at the same time its central problem, is the persistence of a particular kind of organization and activity from generation to generation. Grapes are not gathered from thorns or figs from thistles: like begets like is confirmed by modern research which has demonstrated what is called the "specificity" or "individuality" of each kind of creature. Each has its own particular kind of living matter, with a definite microscopic and ultra-microscopic architecture, and with a system of chemical reactions different from those of other creatures.

The largest fact of inheritance is the more or less perfect maintenance of this sum of characteristics from

generation to generation, and it is useful to distinguish between the persistence of the general fundamental characters, from which there is never much divergence, and the persistence of more superficial and recent features, which is less secure. It is rare for a child to be born whose characters are in any respect at a level below that of the type of modern man; but it often happens that an individual peculiarity inborn in the parent fails to reappear in the offspring.

Inborn Peculiarities

On the other hand, relatively unimportant peculiarities, such as having only two joints in the fingers (brachydactylia), have been known to persist for six generations, and may in domesticated animals or cultivated plants become permanently characteristic of a breed or variety, as in lop-eared rabbits, or in greatercelandine (*Chelidonium*), with cut-up leaves. All sorts of inborn peculiarities, except of course complete sterility, may be transmitted, whether structural or functional, trivial or important, beneficial or injurious, bodily or mental. Even subtle characters like longevity, fertility, immunity, and susceptibility to certain diseases may be transmitted. The word "may" cannot, however, be changed into "must," for against the fact of hereditary persistence or inertia has to be placed the fact of variability or divergence. Like only tends to beget like; the entail is very frequently broken; novelties are continually emerging.

In this connexion it is important to understand that an inborn defect in some vital process, such as excretion or digestion, or in some important part of the body such as the brain or the blood, is quite likely to appear in the next generation; and there is a grievous list showing the heritability of this sort of disease and defect. On the other hand, it is misleading to speak of the transmissibility of any disease that is due to a microbe. There may be infection before birth, as in the case of syphilis; or there may be an inheritance of a predisposition to the disease, e.g. a susceptibility to tubercular infection; or in mammals there may be a handicapping of the offspring because of disease in the mother; but there is no warrant for speaking of the inheritance of microbic diseases as such.

Some light is thrown on the persistence of hereditary characters by the fact of germinal continuity. It was pointed out by Galton, Weismann, and others that when a fertilised egg-cell is dividing and

redividing to form a mass of embryonic cells, out of which tissues and organs are soon formed, some of the original germinal material is kept apart, not sharing in body-making, to form the germ-cells of the offspring. In a large number of types this early segregation of definite germ-cells has been demonstrated; in other cases all that can be said is that there is a lineage of unspecialised elements which at last leads to the establishment of the essential reproductive organs.

The general idea is that the characteristic protoplasmic organization (including the associated possibilities or actualities of chemical and other activities) is continued intact along a lineage of non-specialised cells, which eventually lead to the germ-cells of the offspring. The egg liberated by the offspring develops into a similar creature, because it is organically continuous with the fertilised ovum from which the offspring developed. Thus it is not accurate to think of a parent handing on characters to the offspring. It is rather that the offspring inherits from the endless chain of unspecialised germ-cells. For this reason, like tends to beget like.

Acquired Characters

Cases where a new generation, e.g. of potatoes or sponges, is obtained by cutting off pieces of the parent's body and planting them out, do not offer any objection. It is probable that all the fundamental qualities of the fertilised ovum are distributed among the cells of the offspring, where most of them lie latent, except under exceptional stimulation. Body-cells may in rare cases give rise to germ-cells, as in cuttings and liberated buds, but in the animal world the usual method is to have a lineage of unspecialised cells.

There has been much discussion about the question of the transmissibility of individually acquired bodily modifications directly due to peculiarities in function or environment. These "acquired characters," as they are wrongly called, are incidents from without, and not to be confused with variations or mutations which are outcrops from within. (See Evolution.) Modifications may be illustrated by the permanent browning of a white man's skin by many years of exposure to the tropical sun, by the great strengthening of a muscle by persistent exercise, or by a callosity developed on the skin as the result of prolonged pressure, and so on. The question is whether these modifications can be handed on as such or even in any degree, so that they reappear by inheritance

in offspring who were not subjected to the unusual influence.

There have been only a few important experiments bearing on the problem, but the answer of the majority of naturalists is that there is not at present any convincing evidence of such transmission. The offspring may re-acquire the parental modification if subjected to similar influences; secondary effects of the parental modification may influence the developing offspring, especially in mammals; a deeply saturating influence may affect not only the parent's body, but the germ-cells at the same time, so that the offspring come to be altered, though not in the same way as the parents.

Moreover, in a few cases it has been made probable that a modification of the parent may produce a chemical substance which gets access to the general cell-substance of the germ-cells, or to the developing embryo or seed, so that there results, as long as the substance lasts, a transient modification of the offspring similar to that of the parent. But at present the evidence in favour of the transmissibility of individually acquired modifications even in a faint degree is very far from convincing. The practical corollary as regards mankind is that increased care should be taken to shield the members of the next generation from influences which are known to produce injurious modifications, and to secure for them a persistence of those peculiarities of nurture which wrought out beneficial modifications in the parents.

In 1865 Mendel stated an important law of heredity, which remained almost unnoticed till 1900, when De Vries, Correns, and Tschermak independently reached experimental results closely resembling Mendel's.

In illustration of characters which exhibit Mendelian inheritance, the following may be cited, the dominant character being named first in each case: Hornlessness and the presence of horns in cattle; normal hair and long "Angora" hair in rabbits and guinea-pigs; crest in poultry and absence of crest; extra toes in poultry and normal four toes; unbanded shell in wood-snail and banded shell; yellow cotyledons in peas and green ones; round seeds in peas and wrinkled ones; absence of awn in wheat and its presence; susceptibility to rust in wheat and immunity from this disease; two-rowed ears of barley and six-rowed ears.

The Mendelian law of alternative inheritance implies three main

ideas: (1) The inheritance consists, in part at least, of "unit characters" which are inherited as a whole or not at all, which behave as if they were discrete units which can be shuffled about and distributed to the offspring in some measure independently of each other. These "unit characters" are believed to be represented by specific constituents or determinants, factors or genes, or architectural arrangements of some sort, resident in the germinal material and probably in the chromosomes. It seems probable, however, that several factors may be sometimes involved in one character, or that one factor may sometimes influence more than one character, or that a factor may undergo a kind of disintegration. New facts have led to the invention of numerous accessory hypotheses.

Dominant and Recessive

(2) When two parents differ in respect of two contrasted unit characters, these do not blend, but one of them appears, more or less in its entirety, in the offspring, and is called dominant, while its analogue that drops more or less out of sight for the time being is called recessive. Or the presence of a character may be dominant to the absence of that character, or conversely. It must be carefully noticed, however, that there are numerous instances of what is called incomplete dominance, as when the crossing of a black and a white Andalusian fowl yields blue Andalusians. Different pairs of factors may interact, and there are many complications which explain how certain distributions of qualities which seem non-Mendelian at first sight may yet come under that interpretation.

(3) The third idea is that of segregation, that in the history of the germ-cells of the hybrids there is a separation of the determiners or factors of the contrasted "unit characters," so that each germ-cell is "pure" as regards the character, either having it or not having it.

Mendelian inheritance in man is illustrated by such abnormal characters as brachydactyly, that is having the fingers all thumbs, with two joints instead of three, or by night-blindness or inability to see by faint light. It is illustrated by such normal characters as brown eyes (dominant to blue), and curly hair (dominant to straight), and in other instances.

The question arises whether there are characters which do not behave in the Mendelian (alternative) manner, but blend in the offspring. Thus it is often said that the skin colour of the mulatto is

intermediate between the white and the black skin-colours of the parents. Castle has shown that when long-eared rabbits are crossed with short-eared ones the offspring have ears of intermediate length and remain so in subsequent generations. He found the same to be true as regards the dimensions of parts of the skeleton, such as the length and breadth of the skull.

In many hybrid plants, the proportions of the leaves, the number of stomata, the thickness of the hairs, and so on, may be approximately intermediate between the conditions seen in the parents. Warren has described a remarkable hybrid between two different genera of cockatoo which does not at first sight suggest Mendelian inheritance, and cases of blending have been reported in regard to trout and sheep.

There is some evidence that a feature characteristic of an ancestral type may lie latent for many generations, and then suddenly find expression in development. This might be the explanation of the appearance of horns in a hornless race, of some striping on a pony, of a fourth toe on a guinea-pig's foot, of a nectarine producing a peach, and so on. But many of the so-called "reversions" or throw-backs are due to arrested development, or to fresh variation, or to unpropitious modification, or, especially in domesticated animals and cultivated plants, to crossing.

Mendelian Experiments

Mendelian experiments have explained many of the so-called reversions in the following way. Many domesticated or cultivated stocks have arisen, it appears, by the dropping out of certain factors in the original wild inheritance. Under human guidance there has been a utilisation of the results of a spontaneous "unpacking" of the inheritance of the original type. Thus from the wild rabbit with its subtly coloured peltage numerous colour-varieties of tame rabbit have been established. When these interbreed there are reversions, that is to say there is repacking of the hereditary items which had been analysed apart.

Modern studies in heredity necessarily attach much importance to outstanding features which admit of ready recognition and measurement. Many of these features are relatively superficial, and in some cases of recent origin. In every species, however, there is a great mass of hereditary character which is no longer in its essentials subject to variation, which is probably passed on *en bloc* in the lineage of the germ-cells.

Thus in every mammal there is a stable inheritance of the essentially mammalian features which are not known to be departed from in any essential way, nor to be departed from in any very remarkable way except on occasions which seem to man's brief span of observation to be very rare. The persistence of this main-mass of inheritance is accounted for by the continuity of the germ-plasm.

The study of heredity leaves in the mind a convincing impression of the value of good stock. To acquiesce, with open eyes and the possibility of escape, in the tainting of a good stock is to do a bad turn to both race and family. The patching-up of what is inherently rotten may be useful to the individual and indirectly to the race, but veneer is not a substitute for sound wood, and some taints persist inexorably for generations.

Inherited Nature and Nurture

The study of heredity leaves a fatalistic impression in the mind, for a man cannot choose his parents. He can choose his partner, however, and in this there may be progress, if good be mated with good. And as an offset to the inertia of hereditary persistence, must be recognized the reality of those variations which are ever occurring and which are the raw materials of progress.

Since development is always the result of an interaction of inherited nature and appropriate nurture, it is of great practical importance to secure that this nurture is the best procurable. Otherwise the promising variations may fail to unfold. Hereditary characters are like seeds requiring sunshine and rain. Moreover, for the individual it is always possible that alterations of nurture may prevent the actualisation of inherited predispositions to evil.

While there is no secure warrant for believing in the transmissibility of individually acquired modifications as such or in any representative degree, there is not on that account any reason to deprecate the value of ameliorative natural conditions which impress beneficial modifications on successive generations, or the value of the social heritage which has its repository not in any germ-plasm, but in literature and art, traditions and institutions, and in the framework of society itself.

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Hereford. City and mun. borough of Herefordshire, of which it is the county town. It stands



Hereford arms

on the Wye, mainly on the left bank, 144 m. from London, and is served by the G.W. Rly. and by two joint lines, being a railway centre of some importance. The notable building is the cathedral. Exhibiting several styles of architecture, this was begun about 1079, on the site of an earlier one, and was completed about 1150. Considerable additions and alterations were made in the 13th and 14th centuries. Restorations were made after 1786, when the western tower fell, and in the 19th century; in 1900-5 the west front was reconstructed. Among its features are the fine nave, the Norman font, the shrine of Cantelupe, the tower lantern, and the modern screen. The lady chapel and the crypt are notable, as is the library with its chained books. The cathedral possesses a unique map of the world made about 1313.

Other buildings are the bishop's palace and the beautiful college of the vicars' choral; S. Ethelbert's and Coningsby hospitals, both old foundations; the latter was founded in 1614, being built on the

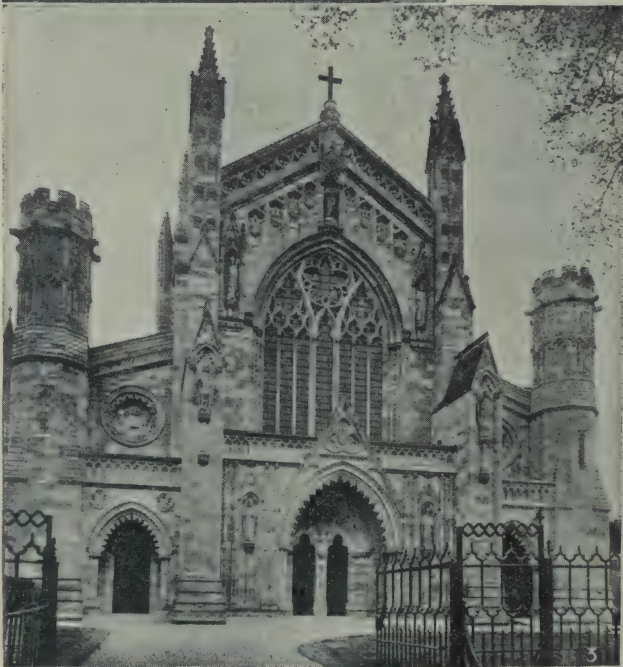
site of a building occupied by the Knights Hospitallers. The schools include a blue coat school and the cathedral school. All Saints and S. Peter's are interesting churches. Hereford has a guildhall, a town hall, and a shire hall, also an art gallery, and a public library and museum. There are only a few remains of the castle and of the town walls. The former is now represented by the castle grounds,

a public promenade with a memorial to Nelson. Every third year a musical festival of the choirs of Gloucester, Worcester, and Hereford Cathedrals is held here. The chief industries are the making of cider,

tanning, brewing, and a trade in agricultural produce. The gas, water, and electricity supplies are in the hands of the corporation, which owns the race-course and markets.

Hereford owes its historical importance to its position on the Welsh border, while as a bishopric it dates from about 672. A castle was built for its protection and this was frequently assailed, the last occasion being during the civil war. In the Middle Ages the citizens obtained the right to hold markets and fairs. They had a merchant guild and the city was soon a corporate town, also a centre of the trade in wool and leather. Weaving was carried on, gloves were made, and there was a mint. From 1295 to 1885 Hereford sent two members to Parliament; until 1918 it sent one. Pop. 23,324.

Hereford, EARL OF. English title long borne by the family of Bohun. William Fitzosbern, one of the Norman leaders at Hastings, was made earl of Hereford in 1067. Between then and his death, in 1071, he was chiefly employed in defending the borders of



Hereford. 1. The bridge over the Wye. 2. Cathedral from the south-west. 3. Cathedral west front

England against the Welsh, and putting down rebels elsewhere. His younger son, Roger Fitzwilliam, succeeded to the earldom, but in 1075, for conspiring against the Conqueror, he lost his lands and his freedom. Miles of Gloucester, a powerful baron in the reign of Stephen, and a stout partisan of the Empress Matilda, was made earl of Hereford in 1141.

When his last son died childless, his lands passed to his daughters, one of whom, Margaret, was the wife of Humphrey Bohun. Their grandson, Henry, was made earl of Hereford in 1199, and his descendants held the title until the last male Bohun died in 1373. In 1397 Henry, afterwards Henry IV, who had married an heiress of the Bohuns, was made duke of Hereford, and when he became king this title was merged in the crown.

Hereford, VISCOUNT. English title, the oldest of its kind, borne since 1550 by the family of Devereux. Walter Devereux, 10th Baron Ferrers of Chartley, a title dating from 1299, was made Viscount Hereford in 1550. He had fought in France for Henry VIII. His grandson and successor was made earl of Essex and the viscounty was held by the earls until Robert, 3rd earl of Essex, died in 1646. The titles were then distributed and Sir Walter Devereux, a baronet, a descendant of the 1st viscount, became Viscount Hereford. His descendants still hold the title, Robert Devereux becoming the 16th viscount in 1855.

Hereford. Hardy breed of cattle raised in Herefordshire and neighbouring counties. The body is red, while the face and mane, chest and abdomen are white; the legs are often white up to the hocks. Pure Herefords are of small esteem for dairying purposes, but they are fine beef-producers and are in favour on the cattle-ranches in Canada, in Australia (especially Queensland), and in the U.S.A. See Cattle.

Herefordshire. County of England. With an area of 842 sq. m., it is almost circular in shape. It is fairly level in the centre, but on its borders are hills, the Malverns on the E. and the Black Mountains in the S. The chief river is the Wye, which flows across the county. Other rivers, tributaries of the Wye, are the Lugg, Arrow, Dore, and Frome. The Temese is a tributary of the Severn. The county town is Hereford; other towns are Leominster, Ledbury, and Ross.

Hereford is an agricultural county, chiefly famous for its cider and its cattle, while the usual English cereals are grown. Orchards abound and hops are grown, and



Herefordshire. Map of the border county, famous for its agriculture and orchards, showing the course of the river Wye

the sheep have a high reputation. The chief railway in the county is the G.W., but it is also served by the Midland. It is in the diocese of Hereford and the Oxford circuit; it is divided into 12 hundreds, and sends two members to Parliament.

Having been a border county, Hereford is full of castles, the chief being Richard's Castle, Clifford, Weobley, Hereford, Wilton, Goodrich, and Wigmore. There was a good deal of fighting here in the centuries after the Norman Conquest, and Hereford was an important place, much of the land being held by the lords marchers, families such as the Cliffords and Mortimers. Later, as the district became more peaceable, fine churches and houses were built. Holme Lacy is perhaps the finest seat in the county. There was a monastery at Abbey Dore.

Herefordshire is noted for its fishing. The population is 113,118, making the county one of the least densely peopled parts of England.

LITERARY ASSOCIATIONS. Richard Whittington, Lord Mayor of London, is supposed to have been born at Sollers Hope in the mid-14th

century. Richard Hakluyt, the geographer, belonged to a family long established at Yatton, near Ross. The Elizabethan poet John Davies of Hereford took his name from his birthplace. John Philips, author of *The Splendid Shilling*, is buried in the N. transept of Hereford Cathedral. Nell Gwynne is said to have been born in Pipe Well Lane (later Gwynn Street), Hereford. John Kyrle, the Man of Ross, made famous by Pope, belonged to the county.

David Garrick was born at the Angel Inn, Hereford; Sarah Siddons passed her early life in the county, and her brother, Stephen Kemble, was born at Ross. Sir Uvedale Price, celebrated writer on the picturesque, lived and died at Foxley in the parish of Yazor. Brinsop, which was the home of his wife's people, has a memorial window to Wordsworth. Elizabeth Barrett Browning passed much of her early life at Hope End, near Ledbury; in 1894 a clock tower was erected at Ledbury to her memory.

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Herefordshire Regiment. Regiment of the British army, established when the Territorial Force was organized in 1907. It consists solely of territorial or volunteer battalions. The 1st battalion was in Gallipoli, 1915, Palestine, 1916-18, and France, 1918. The depot is at Hereford.

Herero or **OVAHERERO.** Negroid people in the S.W. Africa Protectorate. Situate S. of the allied agri-



Herero. Warriors of the South-west African people

cultural Ovambo, they were formerly called Cattle Damaras, to distinguish them from the more primitive Hottentot-speaking Hill Damaras. Muscular, aggressive, skin-clad, they were the only purely pastoral Bantu-speaking people extant until they adopted some agriculture under missionary direction. They petitioned Sir Henry Barkly in 1872 for a British protectorate, but in 1884 their country was annexed by Germany.

In 1881, after a period of mutual tolerance, they waged ruthless warfare against the Hottentots and, in 1903-6, they rebelled against the German colonial forces, at whose hands large numbers perished. The remainder, estimated (1913) at 21,600, as compared with some 85,000 before the German occupation, were deprived of their cattle and gathered into reservations. See Africa.

Hereroland. Country forming a portion of the S.W. Africa Protectorate, also called Damara-land or Damaland. It lies between Namaqualand on the S., and Ovamboland on the N. The coastal

region is waterless desert; behind this area is a mountainous district, with peaks 8,500 ft. high, and beyond this there is good pastoral and agricultural country, extending towards the Kalahari Desert. The chief towns in Hereroland are Windhoek, Karibib, Rehoboth, Gobabis, Omaruru, and the port of Swakopmund. The only harbour is Walvis Bay, lying S. of Swakopmund. See The Germans and Africa, P. E. Lewin, 1915.

Heresy (Gr. *hairesis*, choice). An opinion based on the choice of its holder and not on recognized authority. The word appears to have been first used in this sense at Alexandria, to denote the theological views of certain Jews, Pharisees, Sadducees, and Essenes. In the early Christian Church it came to mean an erroneous doctrine held by a body of people, but differing from that of the Church generally. Heresy differs entirely from unbelief or even scepticism. It believes and upholds Christian doctrine, but it misunderstands and misinterprets it. Similarly, it is not identical with schism, for a schismatic may be quite orthodox in his belief, while separating himself from the household of faith on some question of discipline.

Heresy is difficult to define, since it presupposes orthodoxy, which is a declaration of a point of view. A teacher who is orthodox from the Anglican standpoint may be an utter heretic from the Roman Catholic, and vice versa. A person who is merely mistaken in his views is not necessarily a heretic; the latter term implies a certain deliberate rejection of the orthodox belief. Only one who persists in his error after warning and instruction is to be regarded a heretic, according to the N.T. rule, "A man that is an heretic after a first and second admonition reject" (Tit. iii, 10). The old canon law provides that only an error persistently maintained is to be counted heresy. The law of England declares to be heresy that which has been so determined heretofore by the authority of the Canonical Scriptures, or the four first general councils, or any of them, or by any other general council, wherein the same was declared heresy by the express and plain words of the said Canonical Scriptures; or such as shall hereafter be determined to be heresy by the High Court of Parliament of this realm, with the assent of the clergy in their Convocation.

Formerly in England bishops were required to punish heretics, and to notify to the Lord High Chancellor the preachers of here-

tical doctrine. In 1400 the statute *De Haeretico comburendo* was passed, and remained in force until it was partly repealed by Henry VIII, and finally abolished by Charles II. The last writs under this Act were issued in the ninth year of James I, when two preachers were burnt for heretical teaching. The ecclesiastical penalties for heresy now in force in Great Britain are deposition from office and excommunication in case of persistent obstinacy. The bishop of each diocese has the power to try charges of heresy brought against his clergy, and to punish them if found guilty.

It is remarkable that almost all the heretical movements in the Church can be traced back to a common origin in the Gnosticism which made its appearance in the days of the Apostles, and was denounced by them in their Epistles. Manichaeism, Arianism, Pelagianism, Montanism, Sabellianism, and the rest, are all either reflections of some aspect of Gnosticism or revulsions from it. See Auto-da-fé; Christianity; Dogma; Lollards.

Hereward. English hero, called the Wake. He held land in Lincolnshire, just before the time of William the Conqueror, and soon after the conquest became associated with those who disliked the Norman rule. He took part in an attack on Peterborough, and was the leader of those who resisted the king in the Isle of Ely. The story says he escaped when William made his way into the isle, in 1071, but nothing more is known of him.

Hereward the Wake, Last of the English. Novel by Charles Kingsley, first published in 1866. A stirring romance of the second half of the 11th century, and the eve of the Norman conquest, it sets forth the outlawry, travels, adventures, and return to his native fen country of the heroic Hereward.

Herford. Town of Germany, in Westphalia. It stands at the junction of the Werre and the Aa, 16 m. S.W. of Minden. It is a rly. junction, and has some interesting churches, one dating from the 12th century and one from the 13th, a modern fountain, an old school, an agricultural college, and a theatre. Manufactures include cotton and textiles, carpets, furniture, machinery, etc. The most important fact in its history is the Benedictine nunnery founded in the 9th century, around which the town grew. The house before its end in 1803 was one of the richest in Germany. Herford was once a free city, but became part of Brandenburg in 1648. It passed to Prussia in 1815. Pop. 32,546.

Herford, CHARLES HAROLD (b. 1858). British scholar. The son of a Manchester merchant, he was born in that city and was educated at Lancaster, Owens College, Manchester, and Cambridge (Trinity). At Cambridge he took a high place in the classical tripos, and at Berlin began the study of German literature. In 1887 he was made professor of English language and literature at University College, Aberystwyth, but in 1901 he moved to Manchester as professor of English literature. He helped to found the English Goethe Society. Herford's literary works include editions of Shakespeare and Jonson. He is author of *The Relations between England and Germany in the 16th century*, and *The Age of Wordsworth*; reviews in the press, especially *The Manchester Guardian*, articles in *The Dictionary of National Biography*, and translations of Ibsen.

Hergenröther, JOSEPH W. (1824-90). German theologian and historian. He was born at Würzburg, Sept. 15, 1824, and educated at Rome and at Munich, where he became professor of church history in 1855. In his *anti-Janus* (Eng. trans. 1870), a reply to Döllinger's *Janus*, he upheld the infallibility of the pope. In 1868 he undertook the arrangements of the Vatican Council, and in 1879 was raised to the cardinalate, and was appointed curator of the Vatican archives. He was the author of a *Life of Photius*, *Patriarch of Constantinople*; a *Universal Church History*; a *History of the Papal States since the Revolution*; and a treatise on *Church and State*.

Hergest, THE RED BOOK OF. A 14th century MS. in the library of Jesus College, Oxford, containing many old Welsh tales and poems. Its contents include a brief chronology from Adam to 1318, and a chronological history of the Saxons to 1376, also many of the poems ascribed to Taliesin (see *Mabinogion* and *Taliesin*). An exact copy of the *Red Book of Hergest* was published by Rhys and Evans in 1887.

Heriot (A.S. *here*, army; *gearu*, apparel, equipment). The arms of a vassal which on his death were returned to his lord. Later it became customary to pay something in kind or in money in lieu of handing over the weapons, and this relief was sometimes called a heriot. Similarly it became the custom, where the manorial system prevailed, for the lord to take on death a beast or some other portion of the property of a tenant, which was also called a heriot. See *Feudalism*; *Relief*.

Heriot, GEORGE (1563-1624). Founder of Heriot's Hospital, Edinburgh, Scotland.



George Heriot,
Scottish philanthropist

From an old print

A goldsmith by trade, he was appointed goldsmith for life to Queen Anne, wife of James VI, in 1597, and jeweller to the king in 1601. After James's accession to the throne of England he settled in London in 1603, and in 1609 took as his second wife a daughter of James Primrose, grandfather of the first earl of Rosebery. He left the residue of his property to found the hospital which bears his name.

Heriot's Hospital. Charitable institution founded in Edinburgh by George Heriot. A combination of Roman and Gothic architecture, erected 1628-59, 162 ft. square with an inner quadrangle 92 ft. square, it is said to have been designed by Inigo Jones. Of its 213 windows, only two are of one pattern. Cromwell used it as a barrack, but it

reverted to its original use when Charles II ascended the throne. Extensively renovated in 1828, it is now a technical college and day school, managed by the Heriot Trust, which, from the funds derived from the investment of Heriot's bequest of £23,625, contributes to the endowment of the Heriot Watt College, and has founded a number of bursaries for government-aided schools in the city. Near the hospital is a fragment of the old city wall.



Heriot Watt College, Edinburgh. Technical college and school of art erected in 1887

Centr. Ingls

Heriot Watt College. Technical college and school of art, Edinburgh. Originally named after James Watt, inventor of the steam engine, of whom there is a statue in the front, it is supported partly by funds of the Heriot Trust. Close by are the Royal Scottish Museum and the Minto House School of Medicine. With Minto House are associated the names of James Syme, the surgeon, and Dr. John Brown, author of *Rab and His Friends*.

Heri Rud. Alternative spelling of the name of the river in Afghanistan also called *Hari* (q.v.).

Herisau. Town of Switzerland, the largest in the canton of Appenzel, Outer Rhodes. It is 6 m. by rly. S.W. of St. Gall, and is a station on the Bodensee-Toggenburg Rly. It stands on the Glatt torrent, at an alt. of 2,549 ft. There are thriving manufactures of machinery, cotton, and muslin, and an old (partly 11th century) church. In the vicinity are the goats' whey cure and chalybeate spring of Heinrichsbad. Herisau was governed by the abbots of St. Gall from the 9th to the 15th century,



Heriot's Hospital, Edinburgh, from the south-west

when the canton joined the Swiss Confederation. Pop. 15,500.

Heritable and Movable.

Term used in Scots law to distinguish the part of a property which descends to the heir, the heritable

property, and the part which goes to the next-of-kin, the movable property. As examples of the first may be cited land, leases, certain fixtures, etc., and of the second, household furniture, money, etc. Such a distinction applies not only in problems of succession but between landlord and tenant, husband and

wife, etc. Machinery that has been installed and fixed to the floor, for example, may be heritable. The ease with which such objects may be moved without damage to a building, and the reason for their addition to the building, determines into which class they fall. *See* Fixtures.

Heritable Jurisdiction. Obsolete class of Scottish jurisdiction which granted certain families power to administer laws irrespective of the common law. These jurisdictions, of which nearly a hundred were in existence at one time, empowered their holders to punish by fines, imprisonment, or even death those who came within their province. Such arbitrary powers, exercised mainly by the great Scottish chiefs, were a definite source of danger to the state, and they were abolished in 1748, properly constituted sheriffs being appointed in their place, and pecuniary compensation for the loss of these rights being paid to the amount of over £150,000. *See* Clan.

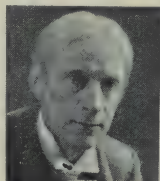
Heritable Security. In Scots law, name given to those securities corresponding to mortgages and charges on land in England. Under these securities a creditor is enabled, for example, to receive rents until the debt is discharged, no matter into whose possession the lands may pass. The principal heritable security is called the bond and disposition in security, and must be recorded in the Register of Sasines. When two securities compete, the one first registered takes precedence.

Heritor. Term used in Scots law for the owner in fee of heritable property in a parish, i.e. for owners of immovable property. It includes corporations, but excludes titulars of tithes or tithes, superiors, mine owners and lessees. Replacing the old word parishioners, heritors are responsible for the upkeep of parish churches, etc.

Herkless, SIR JOHN (1855-1920). Scottish eccles. historian. Born at Glasgow, Aug. 9, 1855, he was educated at Glasgow high school and university and at Jena. Tutor in English literature, Queen Margaret College, Glasgow, he was assistant minister at St. Matthew's Church, Glasgow, 1881-83; and minister of Tannadice, Forfarshire, 1883-94. From 1894-1915 he was regius professor of eccles. history at St. Andrews, serving as provost 1911-15, when he was appointed vice-chancellor and principal of the university and principal of the united college of St. Salvador and St. Leonard. Knighted in 1917, he died June 11, 1920.

His books include *Cardinal Beaton, Priest and Politician*, 1891; *The Church of Scotland*, 1897; *Francis and Dominic*, 1901; *Introduction and Notes to Hebrews* (Temple Bible), 1902; and (with R. K. Hannay) *The College of St. Leonard*, 1905; and *The Archbishops of St. Andrews*, 5 vols., 1907-16.

Herkomer, SIR HUBERT VON (1849-1914). British painter. He was born at Waal, Bavaria, May 26,



Hubert Herkomer
Mills

1849, the son of a wood carver. In 1857 the family settled at Southampton, where young Herkomer attended the local art school. In 1866 he joined the school at S. Kensington, but only remained a few months. In 1869 he again came to London, became an exhibitor at the Dudley Gallery, and a contributor of sketches to *The Graphic*, and in 1871 was elected to the Institute of Painters in Water Colour. In 1874 his great success, *The Last Muster*, appeared at the Academy. He was elected A.R.A. in 1879, and R.A. in 1890.

In 1883 he founded his famous school of art at Bushey, and from 1885-94 was Slade professor at Oxford. Among his memorable works are *Found*, 1885, in the Tate Gallery; *Lady in White* (portrait of Miss Grant), 1885; portrait in enamel of the German Emperor, 1899; *A Zither Evening* with my Students, 1901; and a gigantic group of the town council of Waal. Herkomer was knighted

in 1907. He died at Bushey, Herts, March 31, 1914. *See* his autobiography in *The Herkomers*, 1910.

Herlies. Village of France, in the dept. of Nord. On the Béthune-Lille road, 5 m. N.E. of Neuve Chapelle, it was prominent in the early months of the Great War. In Oct., 1914, the ridge to the north of the village was the scene of an advance by the British 2nd corps, and the village was captured by Royal Fusiliers and Lincolns, Oct. 17, at the point of the bayonet. Lost in the spring of 1918, it was regained by the British in Oct. *See* Ypres, Battles of.

Herm. One of the Channel Islands. It is 3 m. E. of Guernsey, and is 1½ m. long by ½ m. broad. It is noted for the extraordinary variety of shells on its beach. Before the Great War the island was leased to a German company, but after being regained by the British it was sold to an English one, with the intention of making it into a summer resort. There are frequent excursions from St. Peter Port, Guernsey, in the summer months. Pop. 33. *See* Channel Islands.

Hermada. Mt. of Italy. It is S. of the main Carso plateau, which lies N. and E. of the N. portion of the Adriatic. It was very prominent in the Great War in the battles between the Italians and Austrians. Heavily fortified by the latter, it barred the Italian advance to Trieste. In the first and second battles of the Carso, Sept.-Oct., 1916, the Italians shelled it, but were unable to open the road to Trieste. In May, 1917, they gained its western slopes, but were driven off on June 5, as they were again, Sept. 6, after having reached it once more. *See* Carso, Battles of the:



Sir Hubert Herkomer. *The Charterhouse Chapel*, one of the artist's best known and most sympathetic paintings, now in the Tate Gallery, London

Hermæ. Small pillars, surmounted by a head, generally of Hermes. They were set up in large numbers in public places in the towns of ancient Greece. It was the alleged mutilation of the Hermæ of Athens in a drunken frolic on the eve of the expedition to Sicily in 415 B.C. that led to the disgrace of Alcibiades (q.v.).

Hermanaric or **ERMANARIC.** King of the Ostrogoths. He founded a vast empire, consisting of a number of vassal states, the boundaries of which are said to have extended from the Don to the Theiss, and from the Danube to the Baltic. Attacked by the Huns under Valamir (A.D. 375), Hermanaric, uncertain of the attitude of his vassals and fearing defeat, threw himself upon his sword. According to another story, he had ordered the beautiful Swanhilda, his son's wife, to be torn to pieces by wild horses. Her death was avenged by her brothers, who cut off Hermanaric's hands and feet and left him to die.

Hermandad (Span., brotherhood). Name given to various confederations of Spanish cities. They were originally formed in the 13th century, partly for maintaining law and order, and partly as a check upon the growing and autocratic power of the great nobles. The confederation provided protection to travellers by suitable police, brought criminals to justice, and in every way acted as the embodiment of the law. The hermandads became for a few years in the 15th century all powerful in Spain, under Isabella, every city becoming a member of one confederation covering all Spain. In the following century, however, its power declined rapidly, and soon it became extinct. The most powerful of the hermandads was the Santa Hermandad, or Holy Brotherhood of the 14th and 15th centuries.

Hermann. Christian name meaning originally a man of the host or army. It is the name of the German national hero, better known under the Latin form Arminius (q.v.).

Hermannstadt. German name of the Transylvanian town, now in Rumania, known as Sibiu (q.v.).

Hermannstadt, BATTLE OF. Fought between the Austro-Germans and the Rumanians, Sept. 19-26, 1916. Under pressure of the Rumanian invasion of Transylvania in Aug.-Sept., 1916, the Austrians, on Sept. 12, evacuated Hermannstadt, strategically important because from it ran a rly. and road, by the valley of the Aluta, across the Roter Turm Pass into Wallachia. Retiring to the



Hermæ. The Hermes of Alcámenes

W. to envelop them. Bavarian mountain troops on the W. moved S. to the Rumanian frontier, reaching it on Sept. 25, and next day attacked and held the pass, and cut the railway. On the E. a German column forced the Aluta and effectually separated the Rumanians there from their 2nd Army farther E. In the centre, on Sept. 26-27, Falkenhayn's infantry advanced, but met with a determined resistance from the Rumanians, who succeeded in getting away part of their forces. But their losses in men and material were heavy, and the Roter Turm was left in the enemy's hands. See Rumania, Conquest of.

Hermaphrodite. Biological term for an organism in which the two sexes are combined. Some low species of animals, such as snails and earth-worms, and many plants, are normally hermaphrodite, possessing both male and female generative organs, which produce sperms and ova. These do not, however, necessarily, or even usually, fertilise each other, cross-fertilisation (see Fertilisation) being secured by the fact that the sperms and the ova in the same individual ripen at different periods.

No cases are known in human beings of true hermaphroditism, i.e. of a human being having both male and female organs present, and both functionally active. The term, however, is applied in medical science to those cases in which glands corresponding to the male testicles and female ovaries are found in one individual; also to the more common cases in which the sex of the individual is doubtful. The explanation of this more common form is to be found in the development of the external genital organs, hermaphrodites usually being individuals in whom a part has persisted which ought to have disappeared in the process of development. Sometimes, though rarely, an individual with ovaries,

and therefore a female, occurs in whom the external appearances are those of a male. See Sex.

Hermaphroditus. In Greek mythology, son of Hermes and Aphrodite. The nymph of a fountain by Halicarnassus fell in love with the youth, and the two combined to form a being with the characteristics of both sexes.

Hermas. Early Christian writer. Supposed to have been a brother of Pope Pius I, he appears to have flourished in the first half of the 2nd century, when he wrote an allegorical work, called The Shepherd, giving a valuable picture of the state of Christianity at Rome during the period. The object of the book was to check worldliness, and it was at one time read in the churches; but it was finally set apart from the canonical Scriptures before the 4th century.

Hermeneutics (Gr. *hermeneutikē*, interpretation). The art or science of interpretation. It deals with the principles and general laws whereby the meaning of the written work of an author or the speech of an orator is established. The term is specially applied to the interpretation of the books of the Old and New Testament, as contrasted with *exegēsis*, commentary or practical exposition of the subject matter.

Hermes. In Greek mythology, son of Zeus. He was born on Mt. Cyllēnē in Arcadia, and on the very day he was born stole some oxen belonging to Apollo. He became an adept in robbery, stealing the trident of Poseidon, the girdle of Aphrodite, and the sword of Arēs. These exploits apparently recommended him to Zeus, who took him to be his messenger and ambassador. In this capacity he executed many notable commissions,



Hermes, with the infant Bacchus, from the statue by Praxiteles

Museum, Olympia, Greece

such as slaying the hundred-eyed Argus and carrying the infant Bacchus to the nymphs at Nysa.

He became the god of eloquence and the god of good fortune, and the patron of merchants, travellers, and also of thieves. One of his chief duties was to conduct the souls of the dead to the nether world. The invention of the lyre was attributed to Hermes. In art Hermes is represented as a handsome and finely proportioned youth, as in the famous statue by Praxiteles at Olympia. He wears the *petasus* or broad-brimmed hat, bears the *caduceus* or staff, which he got from Apollo in exchange for the lyre he invented, and has the winged sandals which enabled him to speed swiftly through the air. The Romans identified Hermes with Mercury (*q.v.*). *Pron.* Her-meez.

Hermes. British cruiser employed as a seaplane carrier. On Oct. 31, 1914, she was sunk by a German submarine in the Strait of Dover as she was returning from Dunkirk to England.

The *Hermes*, a British aircraft carrier built 1918-20, has a displacement of 10,400 tons, with a speed of 25 knots. The whole of her flying deck is available for aircraft to rise and land, and by a special arrangement for the emission of smoke there are no funnels or other obstructions.

Hermesianax. Greek elegiac poet. A native of Colophon in Asia Minor, he flourished during the reign of Alexander the Great. One of the chief representatives of the Alexandrian school, he was the author of three books of elegiacs, named *Leontion* after his mistress, containing some pretty love-stories, mythological and historical. They show considerable facility of invention, but the language is frequently artificial and affected.

Hermetic Books. Certain writings attributed to Hermes Trismegistus (Hermes thrice-greatest), the name by which the Egyptian god Thoth was known to the Greeks. He was considered the inventor of all the arts and sciences, especially the occult. The hermetic books, according to Clement of Alexandria 42 in number, were of a philosophical or scientific character, most of them probably the work of certain Alexandrian Platonists belonging to the 2nd century A.D.

There is a complete translation of the extant works and fragments by L. Ménard, 1866, and of the *Poimander* by J. D. Chambers, 1882. Trismegistus was supposed to possess great skill in shutting up

vessels with a magic seal, hence the modern expression "hermetically sealed" applied to closing a vessel or tube in such a manner that it is absolutely airtight.

Hermies. Village of France, in the dept. of Pas-de-Calais. It is 17 m. S.E. of Arras, and 10 m. S.W. of Cambrai. Stormed by the British, April, 1917, it was gallantly defended by the 17th division on March 22, 1918, the second day of the great German offensive towards Amiens. Later, it was yielded up in the British retreat, but recovered in the autumn of 1918. After the Great War the village was "adopted" by Huddersfield. *See* Arras, Third battle of; Cambrai, Battles of.

Hermione. Leading female character in Shakespeare's tragedy, *The Winter's Tale*. Accused by her husband, the madly jealous Leontes, king of Sicilia, of having committed adultery with Polixenes, king of Bohemia, and pronounced innocent of the offence by Apollo's oracle, she falls into a faint, which is reported to the king as fatal, and is only reunited to him and to her daughter, Perdita, after a lapse of 16 years. *See* Anderson, Mary.

Hermione. Ancient city of Greece, in the prov. of Argolis and Corinthia. Standing on the mainland N.W. of Hydhra, it was a prominent port with a double harbour, but the only remains extant are the scanty ruins of its once famous temple of Poseidon. Founded by the Dryopes, it figured for a time as an independent state, but became subject to Argos. *Pron.* Her-mi-onee.

Hermit OR **EREMITE** (Gr. *erēmos*, solitary). Term applied to those who live in monastic communities, but especially to one living a solitary life in a cave or hut of his own construction, who has abandoned the world and its ways, and practises the severest austerities. Paul of Thebes, according to tradition the first hermit, is said to have fled to the desert during the persecution of Decius and to have lived in a grotto for 90 years. Anthony, Hilarion, Arsenius, and Simeon Stylites are among other famous hermits of history or legend. *See* Anchorite; Asceticism; Laura; Monasticism; consult also Monks

of the West, C. F. R. de Montalembert, new ed. 1896; *Wisdom of the Desert*, J. O. Hanney, 1904.

Hermit. Small group of islands in the western portion of the former German territory known as the Bismarck Archipelago, in the Pacific. They lie off the E. coast of New Guinea. A British naval force annexed the islands in Nov., 1914. *See* Bismarck Archipelago.

Hermitage. Retreat, cell, or habitation of a hermit or recluse. In modern usage the name is often applied to buildings that have nothing in common with the original meaning, e.g. to a palace of Catherine II in Petrograd; to a fashionable garden resort in Moscow; and to a palace near Bairreuth, Bavaria, once occupied by Frederick the Great. There was a Hermitage, in the old sense of the term, at Warkworth, Northumberland, one on S. Herbert's Island, Derwentwater, and a retreat of S. Francis, near the convent of S. Francisco, Assisi, Italy. A 13th century stronghold of the Douglas family, near Castleton, on the Scottish border, was known as the Hermitage.

Hermitage, THE. Museum and picture gallery attached to the Winter Palace, Petrograd, Russia. The original building was erected for Catherine II in 1765, enlarged in 1775 and 1778-87, and reconstructed in 1840-52 for Nicholas I. The first building, known also as the Small Winter Palace and the Pavilion Hermitage, was connected by a flying bridge with the empress's apartments, and contained



Hermitage, Petrograd. The south entrance of the museum and picture gallery

three picture galleries. As reconstructed in 1840-52, the Hermitage formed a rectangle 170 yds. long and 124 yds. wide, with three courts planned to contain the imperial art collections.

The older part, devoted to silver and porcelain collections, the Romanoff Gallery, Marble Hall, and Winter Garden were entered from

the Winter Palace. The entrance to the main building, of two storeys, was in the Milliønnaya (see Petrograd, plan). On the ground floor, before the Revolution, were Egyptian, Assyrian, Russian, Scythian, and Siberian antiquities, Greek and Roman sculpture, vases, bronzes, and mediæval and Renaissance armour and weapons. The first floor contained an almost unique collection of paintings representative of the great masters, coins, medals, gems, and ornaments. There was also a valuable collection of rare books and MSS., etc.

Hermitage. French wine grown near Valence, in the Drôme. Red Hermitage resembles Beaune in colour and strength, and claret in elegance; the white, of which little is made, is similar but superior to Chablis. Beaujolais, often classed with Hermitage, is grown on the northern hills of the Rhône dept.

Hermit Crab (*Pagurus* and *Eupagurus*). Popular name for a group of small crabs which take up



Hermit Crab. Specimen of *Pagurus* Bernhardus

their abode in the empty shells of whelks and other gastropods or in living sponges. This habit is due to the fact that the hinder half of the body is not protected by a hard carapace and needs shelter against its enemies. The abdomen is provided with a pair of grasping appendages by which the crab clings tightly to the shell, from which it is not easily extracted. Eleven species are found around the British coasts. See Crab.

Hermogenes OF TARSUS (2nd century A.D.). Greek rhetorician. He taught in the reign of Marcus Aurelius at Rome, where he was considered a youthful prodigy. He was the author of four extant rhetorical treatises, on disputed points of law, invention of arguments, different styles, best uses of material, and of some rhetorical exercises. *Pron.* Her-moj-eneez.

Hermon. Mt. of Syria. It forms the S. extremity of the Anti-Lebanon range and is now known as the Jebel esh Sheikh. Often mentioned in the Bible, it is 9,380 ft. high, and on its slopes are the ruins of a great temple of Baal. The range called Little Mt. Hermon lies about 24 m. S.E. of Acre.

Hermonthis. City of ancient Egypt. It is close to the present Armant or Erment, 459 m. S. of Cairo and 9 m. from Luxor. Here are the remains of a temple of Isis and numerous other ruins. The city was called On, or, to distinguish it from other places of the same name, the Southern On, or Per-Mont (House of Mont), whence came the Greek name Hermonthis.

Hermopolis. Greek name of the ancient Egyptian city of Khmunu. About 4 m. inland from Roda, and 176 m. by rly. S. of Cairo, Hermopolis was the chief centre of the worship of Thoth, the god of writing and science.

Hermopolis (*Hermou polis*, City of Hermes). Seaport of Greece, capital of the barren island of Syros (Syra) and the dept. of the Cyclades. Situated on the E. shore of the island, in a sheltered bay, it consists of an old and a modern well-built town, and is an administrative centre. It has a good harbour, an arsenal, high school, seminary, theatre, etc. The seat of a Greek and a R.C. bishop, it has a shipbuilding industry, and manufactures "Turkish Delight," cottons, leather, flour, and glass. The exports include emery, valonia, sponges, and tobacco; its imports are considerable. Pop. 18,132.

Hermosa (Sp., beautiful). Pass or mule track over the Andes between San Juan in Argentina and the Chilean town of Ovalle in Coquimbo.

Hermosillo. City of Mexico, capital of the state of Sonora. Known also as Pitio, it stands on the river Sonora, 89 m. by rly. N. of Guaymas, and is a busy trade centre, particularly with the U.S.A. Silver and copper are mined; bullion, hides, ores, and fruits are

exported. It contains a cathedral, a mint, and a library. Sugar is grown, and flour-milling and distilling are carried on. Pop. 14,575.

Hernani, ou L'HONNEUR CASTELLAN (Hernani, or Castilian Honour). Five-act tragedy in verse by Victor Hugo. It was produced at the Comédie Française, Paris, Feb. 25, 1830, and ran until June 18, 1830. It was a departure from traditional literary form, liberated the French stage from the thralldom of the classical unities associated with the school of Racine, marked the beginning of the romantic movement of 1830-50, and provoked at the outset extraordinary opposition which resulted in at least one fatal duel.

It is notable for the vigour of its verse, the effectiveness of its stage situations, and the long soliloquy of Charles V before the tomb of Charlemagne. The titular hero is a mysterious bandit who at the moment of his marriage dies by his own hand in order to keep his word to his enemy. Upon Hugo's work Verdi founded his opera *Ernani*, produced at Venice, March, 1844; when produced in Paris in 1846, it was named *Il Proscritto*. Fechter and Edwin Booth acted in an English adaptation, and this, like Verdi's opera, was in four acts. Sarah Bernhardt made one of her many successes in the rôle of the heroine Doña Sol. See Hugo, Victor.

Hernani. Town of Spain, in the Basque prov. of Guipuzcoa. It stands on the river Urumea, 8 m. S.E. of San Sebastian. The chief features of the town are several palaces and a church celebrated for its wood carvings. In the vicinity, in 1836, the Carlists defeated an English Legion. Iron mines afford employment for many of its inhabitants.

Herne Bay. Urban district and watering-place of Kent. It is 12 m. from Margate and 7 m. from Canterbury, with a station on the S.E.

& C. Rly. Visited in summer for its sands and bracing air, its attractions include a long esplanade, a pier with a large pavilion, a concert hall, and a winter garden laid out as a memorial to Edward VII. Away to the E. is Reculver (*q.v.*), and 1½ m. inland is the village of Herne, with an old church. Pop. 7,800.



Hermon, the mountain at the southern extremity of the Lebanon range, Syria



Herne Bay, Kent. The sea front looking east towards the Clock Tower

Frith

Herne Hill. Residential dist. of London, S.E. It lies between Brixton on the W. and Dulwich on the E. and has a station on the S.E. & C.R. It is in the boroughs of Camberwell and Lambeth. At No. 28, Herne Hill, the road leading N. from the rly. station to join Denmark Hill, Ruskin lived in 1823-43, and at No. 30 in 1848. Between Burbage Road and Dulwich are the Herne Hill athletic grounds. Brockwell Park adjoins the district. The name of Herne Hill is believed to be derived from Heron Hill.

Herne the Hunter. Horned apparition which was supposed to haunt a certain oak in Windsor Forest in the time of Elizabeth. The legend is used to Falstaff's undoing in *The Merry Wives of Windsor*, and forms a notable feature in Harrison Ainsworth's romance *Windsor Castle*. Herne's Oak, said to have been six hundred years old, was blown down, Aug. 31, 1863. A young oak was planted on the spot by Queen Victoria, Sept. 12, 1863. See Windsor, the Castle of our Kings, A. Goddard, 1911.

Hernia or RUPTURE. Latin name given to the protrusion of an organ or part of an organ through an opening in the cavity which normally contains it. After an injury to the head, for example, the brain may protrude through the scalp, forming a hernia of the brain. The term, however, is commonly applied to the protrusion of organs in the abdominal cavity through weakened spots in the abdominal wall.

Congenital defects or weakness of the abdominal wall are frequent predisposing causes. The actual rupture, which occurs later, may be due to frequent strain upon the wall, resulting from occupations entailing lifting heavy weights; weakening of the abdominal wall, such as may follow childbirth; direct injury to the wall; or weakness in the neighbourhood of a scar following an abdominal operation.

A hernia consists of a sac formed by the peritoneum or lining membrane which covers the abdominal organs, and of the contents of the sac, most frequently a part of the intestine. The abdominal wall is pushed in front of the protruding mass, and the sac becomes adherent to the surrounding parts.

In inguinal hernia part of the abdominal contents, usually a portion of the intestine or membranous covering of the intestine, has passed through the inguinal canal, a narrow channel towards the inner end of the groin, beneath the skin, through which the spermatic cord and blood-vessels pass down to the testicle. In the early stages, a slight swelling only can be felt in the region of the inguinal canal, which enlarges when the patient coughs. In the later stages, the swelling is larger, and may eventually extend into the scrotum.

A reducible hernia is one in which the protruded mass may be replaced in the abdominal cavity by gentle manipulation. A femoral hernia is less common, in which the protrusion passes through the crural canal, and appears as a rounded swelling on the inner side of the thigh near its junction with the abdomen. An umbilical hernia consists of the protrusion of the abdominal contents through a weakened scar of the umbilicus or navel. Ventral hernia is a protrusion through some other spot in the abdominal wall.

The treatment is either palliative or radical, i.e. by operation. Palliative treatment consists in wearing a truss, i.e. an appliance consisting of a pad which presses upon and closes the aperture in the abdominal wall, and is kept in position by a spring belt passing round the body. A truss should be well fitted, and the contents of the hernia should never be allowed to come down. In some cases, this treatment may effect a permanent cure after the truss has been worn for a year or two.

The operative treatment consists essentially in sewing together the tissues which form the abdominal wall, so as to reduce or close the aperture through which the hernia is protruded.

A hernia may become inflamed, obstructed, or strangulated. The symptoms of an inflamed hernia

are pain, tenderness, and swelling, while the skin over the hernia may be hot and congested. Fever may be present, but the constitutional symptoms are not so severe as in strangulation.

In an obstructed hernia, the onward passage of material through the intestine is prevented. The symptoms are usually constipation, nausea, and vomiting. The hernia becomes irreducible and may pass on to strangulation. In a strangulated hernia, the blood-vessels become pressed upon, so that the flow of blood through them is obstructed. This may lead to gangrene of the mass. The symptoms are severe pain, with signs of shock. The patient feels faint, the pulse is slow and weak, the temperature may be subnormal, and the skin covered with cold sweat. Strangulation urgently demands surgical treatment. See Truss.

Hernici. People of ancient Italy akin to the Sabines, living in the Apennine country. Continual warfare was waged between them and the Romans, by whom they were finally subjugated in 306 B.C. Their chief stronghold was Anagnia. See Anagni.

Hermosand. Seaport of Sweden, capital of the län or govt. of Västernorrland. It stands on Hermö island, in the estuary of the Angerman river, and is connected by bridges with the mainland, 423 m. by rly. N. of Stockholm. It has a good harbour, a cathedral, a school of navigation, and a technical school. It was the first European town to adopt electric lighting. Formerly a staple town, it has trade in linen, sulphite, fish, iron ore, and lumber. An old city, it has suffered severely at the hands of the Russians, notably in 1710, 1714, and 1721. Pop. 9,875.

Hero. General term applied to one who performed great deeds in the mythical ages of Greece. One or other of the parents of heroes was frequently a god or goddess, and sometimes after their death heroes became gods themselves. Among the best known heroes of Greek mythology are Hercules, who accomplished the famous Twelve Labours; Theseus, who slew the Minotaur; Perseus, who cut off the Gorgon's head and rescued Andromeda from the sea-monster; and Achilles and Hector, the champions of the Greeks and Trojans respectively at the siege of Troy. The name was also given to the oekists, founders of colonies or cities, who received semi-divine honours after death, and to famous personages such as Leonidas. See *The Psychology of the Unconscious*, Carl Jung, 1916.

Hero. In Greek legend, priestess of Aphroditē at Sestos, on the shore of the Hellespont opposite Abydos. *See* Leander.

Hero of Alexandria. Alexandrian mathematician. His exact date is unknown, but his reputation has survived for several memorable discoveries in mathematics and science. His most remarkable discovery was that of the well-known formula for the area of a triangle in terms of its sides and the semi-perimeter. It is also certain that he knew elementary trigonometry and the solution of quadratic equations in algebra.

Hero was responsible for a number of mechanical inventions, the chief of which is the fountain that bears his name. This was an automatic fountain working by means of air pressure. He is also credited with the description of a small stationary steam-engine. The fragments that remain of his works place him as being the leading scientist of his age.

Herod (74-4 B.C.). King of Judaea, called the Great. The son of Antipater and grandson of Antipas, governor of Idumaea, he was appointed ruler of Galilee at the age of 25, and afterwards of Coele-syria. When Palestine was invaded by the Parthians to restore Antigon-us to the throne of his father Aristobulus, Herod escaped to Rome, where Antony and Octavian, with the sanction of the senate, made him king of Judaea. He returned to Palestine in 39 B.C. and captured Jerusalem in 37, in which year he married Mariamne, the Asmonean princess, as his second wife. His first difficulties were with the hostile Sadducean and Phari-saïc parties, and throughout his reign (37-4) he was opposed by the enmity of his wife's family. After the battle of Actium (31) Herod was confirmed in his position and territory by Octavian, whom he visited at Rhodes, expecting to be executed owing to the help he gave Antony. From that time on he governed Palestine on behalf of Rome.

Herod built fortresses, established new towns, rebuilt the temple at Jerusalem, organized games, and encouraged Greek writers and teachers to settle in his kingdom. His brother Pheroras and his sister Salômē plotted against his sons by Mariamne, which led Herod to have them assassinated. Mariamne he had put to death owing to jealousy. His last years were embittered by family feuds and plots arising out of the enthusiasm of the people for the Asmonean house. His eldest son, Antipater, he had put to death ten days

before his own death. The story of his massacre of the innocents is generally discredited nowadays. The picture of Herod as an inhuman monster as given by the biased Jewish historian, Josephus, is also open to serious criticism. *See* Life and Times of Herod the Great, W. Willett, 1860; *Antiquities of the Jews*, F. Josephus, rev. trans. A. R. Shilleto, 1898; *The Jewish People in the Time of Jesus Christ*, E. Schürer, Eng. trans. 1890; *The History of Herod*, J. Vickers, rev. ed. 1901.

Herod. Tragedy written by Stephen Phillips and produced Oct. 31, 1900, at Her Majesty's. The play deals with the murder of Mariamne's brother Aristobulus by order of Herod, with the successful plot formed by Herod's mother and sister to bring about the execution of Mariamne, and with Herod's unavailing grief and remorse for her death. Beerbohm Tree played Herod, and Maud Jeffries Mariamne.

Herod Agrippa I (d. A.D. 44). Son of Aristobulus and Berenice and grandson of Herod the Great. He was made king by Caligula and governor of Judaea and Samaria by Claudius. *See* Agrippa.

Herod Agrippa II (d. 100 A.D.). Son of Herod Agrippa I. He was the last of the Herodians (*q.v.*). Paul appeared before him in A.D. 60. *See* Agrippa.

Herod Antipas. Son of Herod the Great by Malthacē, a Samaritan. By his father's will he was made tetrarch or governor of Galilee and Peraea. He built for his capital a city on the Sea of Galilee which, to ingratiate him-

self with the Roman emperor, he called Tiberias. His first wife was a daughter of Aretas, an Arabian prince called in 2 Cor. 11 king of Damascus; but, becoming enamoured of Herodias (*q.v.*), wife of his half-brother Herod Philip, a private citizen in Rome, he divorced his own wife and married her. By Herodias he had a daughter, Salômē. Antipas was denounced by John the Baptist (*q.v.*), who was first imprisoned and then, at the instigation of Herodias and Salômē, executed.

Jesus was examined before Herod, whose conduct on this occasion led to his reconciliation with Pilate. Defeated in battle by Aretas, A.D. 36, Antipas went to Rome c. 38-40, at the instance of Herodias, to secure the title of king, but was accused of treason and condemned by Caligula to perpetual banishment to Lugdunum (Lyons), whither Herodias accompanied him. He died in exile. *See* Matt. 14; Mark 6 and 8; Luke 3, 13, and 23; *Antiquities of the Jews*, xviii, 6 and 7, F. Josephus, rev. trans. A. R. Shilleto, 1898.

Herodas or **HERONDAS** (3rd cent. B.C.). Greek writer of mimiambi, *i.e.* mimes or humorous sketches written in iambic metre. He was a native of Cos and a younger contemporary of Theocritus. In 1890 an Egyptian papyrus was found at Fayum, containing six of his mimes in a more or less perfect state. These short, dramatic pieces are written in the Ionic dialect and in the *seazon*, or "halting" iambic metre, in which a spondee (two long syllables) takes the place of an iambus (short and long syllable) in the



Herod Antipas. S. John the Baptist bound by order of the Governor of Galilee
Fresco by Andrea del Sarto, in the cloister of the Sculso, Florence

last foot. A unique specimen of their kind, they consist of scenes from everyday life in dialogue form, in some parts reminiscent of Theocritus. The characters introduced are sometimes unpleasant, sometimes of a more homely type. See *A Realist of the Aegean*, H. Sharply, 1906.

Herodians. Term applied to the family of Herods. Idumeans by descent and Jewish by faith, they sought the favour of Rome. They included Herod the Great, Herod Antipas, Herod Philip I, Herod Philip II, Herod Agrippa I and Herod Agrippa II. The term is applied also to those who, for various reasons, supported the political aspirations of the Herods and sided with the Pharisees and Sadducees against Jesus. See Matt. 22; Mark 3 and 12.

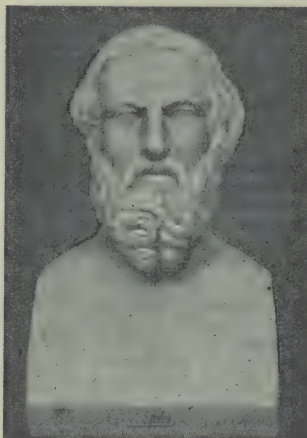
Herodian or **HERODIANOS** (c. A.D. 170-240). Roman historian. A Greek by birth, he appears to have resided chiefly in Rome. His history, written in his native tongue and still extant, embraces the period from the death of Marcus Aurelius to the reign of Gordian III (187-238). In spite of geographical and chronological inaccuracies and lack of political insight, it is a lively and generally trustworthy account of contemporary events and forms a valuable supplement to the work of Dion Cassius (*q.v.*).

Herodias. Sister of Agrippa I. She left her first husband Herod Philip I and married his half-brother Herod Antipas (*q.v.*). This act brought down upon the two the condemnation of John Baptist, whose head, at Herodias' request, was demanded and granted to her daughter Salômé, and involved Antipas in a disastrous war with his first wife's father. Her ambition finally brought about the ruin of Antipas, with whom, however, she decided to go into exile. See Matt. 14; Mark 6.

Herodotus (c. 484-424 B.C.). Greek historian, commonly called the Father of History. Born at Halicarnassus in Caria, in Asia Minor, a city which, though peopled by Dorian Greeks, was under Persian rule, Herodotus was technically a Persian subject by birth. The first half of his life was spent in travel. He lived some time at Samos, where he learned the Ionic dialect in which he wrote his history. About 446 B.C. he came to Athens, where he became intimate with the poet Sophocles. By the time he reached middle life he had travelled in Persia, Egypt, Italy, and Sicily, and had visited even the N. shores of the Black Sea. During his travels Herodotus was

diligently collecting materials for his history, but where the work was actually written is not known.

Its theme is the great struggle between the Persians and the Greeks, which was still fresh in the memory of the Hellenic world. The first five of the nine books are taken up with a sketch of the rise of the Persian empire, in which the author gives a history of Lydia as a preliminary, with historical and descriptive digressions on Egypt and other countries with which the Persians came into contact. The last four books deal with the actual clash of arms between Persians and Greeks, giving the immortal stories of Marathon, Thermopylae, and Salamis, and ending with the taking of Sestos by the Greeks in 478. The work is thus virtually a sketch



Herodotus, Greek historian
From a bust in the Museum at Naples

of the history of the world, as then known, with geographical, archaeological, and other digressions.

Like the Greek tragedians, Herodotus held the belief that overweening arrogance among mortals slowly but surely brings in its train the punishment of heaven, and this idea runs all through the history. The work, as a whole, is one of the most fascinating ever written, perhaps the most enthralling section being the second book, which deals with the history and civilization of Egypt. With his clear and simple style, Herodotus is a master of narrative prose. He is rightly adjudged to be also the Father of History, inasmuch as he was the first to write history according to a plan or scheme, whereas those that went before him were mere chroniclers.

His veracity has been impeached, but although his history contains much that is palpably untrue, Herodotus wrote in good faith.

There are excellent translations of the history by Rawlinson and by G. C. Macaulay. See *Ancient Greek Historians*, J. B. Bury, 1909.

Heroes and Hero Worship.

Volume of lectures on Heroes, Hero-Worship, and the Heroic in History by Thomas Carlyle, 1841. The six lectures, delivered at Willis's Rooms, London, in May, 1840, comprise some of the best and most characteristic of Carlyle's vigorous and stimulating work. They deal successively with the hero as divinity, prophet, poet, man of letters, and king, taking as typical examples Odin, Mahomet, Dante, Shakespeare, Luther, Knox, Johnson, Rousseau, Burns, Cromwell and Napoleon.

Heroic Play. Form of dramatic tragedy set up in the second half of the 17th century, of which Dryden was the chief, but not the first, exponent. The tragic drama had degenerated from the greatness of Elizabethan time, and an attempt was made to reestablish it more or less closely on French models, both in choice of themes and in the use of rhymed couplets. In his essay *Of Heroic Plays*, Dryden credited his predecessor and collaborator, Sir William D'Avenant, with having originated them. He declared that the heroic play should be an imitation in little of an heroic poem (*i.e.* epic), and that love and valour ought to be the subject of it.

The chief attempts of Dryden himself in this direction were *Tyrannic Love* or *the Royal Martyr*, 1669; *Almanzor* or *Almahide* or *the Conquest of Granada*, 1670, in which he came nearest to justifying his theory as to the suitability of his form; and *Aureng-Zebe* or *the Great Mogul*, 1675. The Heroic Play was made the satiric theme of *The Rehearsal*, 1671, by the duke of Buckingham and others. See *Drama*; *Poetry*; *Tragedy*.

Heroic Verse. Name given to the form of verse employed in epic poetry which deals with the life and deeds of heroes. In Greek and Latin, as in *The Iliad* and *The Aeneid*, the verse is hexameter. In English it is rhymed iambic pentameter, used by Dryden and by Pope in *The Rape of the Lock*. The French adopted as the sole recognized form for dramatic and epic poetry the twelve-syllabled rhymed measure, with alternate masculine and feminine, single and double, rhymes, as in Corneille and Racine. In Italy the recognized form is the Ottava Rima (*q.v.*).

Heroin or **DIAMORPHINE HYDROCHLORIDE**. Alkaloid obtained by acting on morphine with acetic acid. It is used in medicine to allay cough in phthisis and asthma.

Heron (*Ardea*). Name given to the birds of the various genera of the family Ardeidae, which in-



Heron. Specimen of the European *Ardea cinerea*

cludes the herons proper and the bitterns. They are closely related to the storks and ibises, and include some 70 species distributed in all parts of the world, but specially numerous in tropical marshes and swamps. They are all carnivorous, feeding mainly on fish, frogs, and insects. All have long legs for wading purposes, long necks, and a long, straight, pointed beak. Most are bluish-grey and white in colour.

The European or common heron (*A. cinerea*) is a well-known inhabitant of Great Britain, and was formerly an object of the chase, being preserved for hawking. It still breeds in many parts of the country, usually in parks, where it is more or less protected. It is easily recognized by its crane-like form and the crest of long, blackish feathers at the back of its head. The plumage is grey on the upper parts, with greyish white below; the forehead, sides of the face, and front feathers of the breast being white. It is about 3 ft. in length, and the pointed beak is yellow.

The common heron feeds upon fish, frogs, snakes, and young mammals and birds, visiting the margins of streams and lakes at nightfall and early in the morning. It nests in colonies or heronries in the tops of tall trees, the nest being very large and flat, and constructed of sticks with a lining of grass. During the breeding season the male bird may usually be seen in the daytime standing on a branch beside the nest, where his mate is incubating the blue eggs. There are several noted heronries in England, one being at Parham, Sussex.

Four otherspecies occur occasionally in the British Islands. The

night heron (*Nycticorax*) is found occasionally in spring and autumn. It is about 22 ins. in length, greenish brown on the back, with slate wings and tail and white underparts. The buff-backed heron (*A. equinoctialis*) is an extremely rare visitor from S. Europe. Its colour is white, with the exception of the rusty buff head, neck, and breast. The squacco heron (*A. ralloides*) is another rarity, only 18 ins. long, with reddish-buff neck and back, the rest of the plumage being mainly white. The purple heron (*A. purpurea*), common in Holland, is sometimes seen in spring and autumn. Ranging in length from 30 ins. to 36 ins., the crown of the head and the crest are purple, and the rest of the plumage is mainly grey and brown.

Herpes Simplex (Gr. *herpein*, to creep). Acute eruption of vesicles or blebs on the skin. The angles of the mouth, buttocks, nipples, and genital organs are most frequently affected. The cause is unknown. Attacks may occur apparently spontaneously or in the course of pneumonia, influenza, and other diseases. Exposure to cold is sometimes a precipitating cause. The appearance of the vesicles may be preceded by a sensation of heat or tingling. The vesicles develop in a few hours and are about the size of a pin's head. They dry up and disappear without leaving a scar in about ten days. Treatment consists in bathing the affected area with boric acid lotion and covering it with a little starch and zinc oxide powder.

Herpes zostër (Gr., girdle), or shingles, is an acute eruption of vesicles occupying the area supplied by a nerve. The cause is unknown. Cases have followed the prolonged administration of arsenic, and occur in the course of locomotor ataxia and other diseases. Sometimes the attack is preceded by slight fever and pain which may be severe. The blebs appear in a few hours along the course of a nerve and persist for about ten days, usually disappearing without leaving a scar. Protection of the affected part by cotton wool, and dusting with starch and zinc oxide powder, is usually the only treatment necessary.

Herrenhaus. German word meaning House of Lords or House of Magnates. It is applied to

assemblies composed of persons of rank who do not owe their seats to popular election. An example is the upper house of Austria before 1918.

Herrenhausen. Palace just outside the town of Hanover, formerly the residence of the electors and kings of Hanover. An avenue of limes, 1½ m. long and 120 yds. wide, leads from the town to the palace. Built just before 1700 by the first elector, Ernest Augustus, the father of George I and the husband of the electress Sophia, who died here, it was a favourite residence of George I, and remained a royal palace until the fall of the dynasty in 1866. Around it are gardens laid out in the French style, and in the grounds are an orangery, a theatre, and some fine fountains. See Hanover.

Herrera, ANTONIO DE (1559-1625). Spanish historian. After studying in Spain and Italy, he entered the service of Philip II, who made him one of his historiographers. His chief work is his History of the Deeds of the Castilians in the Islands of the Pacific (1601-15). He also wrote a work on the succession question in England and Scotland in the time of Mary Stuart, and a general history of the world in the time of Philip II.

Herrera, FRANCISCO DE (1576-1656). Spanish painter. Born at Seville, he studied under Luis Fernandez. He was a pioneer of the realistic movement in Spain,



Herrenhausen, Germany. The palace, formerly the residence of the kings of Hanover

and had Velasquez among his pupils. Of intractable disposition, he once suffered imprisonment for illegal coining, and neither his children nor his pupils were able to live with him. At 74 he went to Madrid, where he worked for the court, under Velasquez's protection, until his death in that city. One may cite his four paintings of the Life of S. Martin in the church of that saint, and his Last Judgement in S. Bernard's, Seville.

Herreshoff, NATHANIEL GREENE (b. 1848). American naval architect. Younger brother of John B. Herreshoff, the blind yacht

designer, in 1881 he was appointed superintendent of his brother's works at Rhode Island. In addition to government work on torpedo boats and other naval craft, he designed the Gloriana racing yacht, which first brought him fame in 1891, while his *Vigilant*, 1893, *Defender*, 1895, *Columbia*, 1899, *Reliance*, 1903, and *Resolute*, 1920, were successful defenders of the America Cup.

Herrick, ROBERT (1591-1674). English poet. Son of a goldsmith and born in London, he was bap-



Robert Herrick

From a print

tized at the church of S. Vedast, Foster Lane, Aug. 24, 1591. It is thought that he was educated at Westminster School, on leaving which he was for several years apprentice to his uncle, a goldsmith. After graduating at Cambridge, where he was a student first at S. John's College and then at Trinity Hall, he returned to London, joined the Jonson circle, and in 1629 became vicar of Dean Prior, near Ashburton, Devonshire, where his wants were attended to by an old servant, Prudence Baldwin (the "Prue" of his poems). Ejected by the Puritans in 1647, he returned to his living in 1662, being buried at Dean Prior Oct. 15, 1674.

Described by Swinburne as "the greatest song-writer—as surely as Shakespeare is the greatest dramatist—ever born of English race," Herrick lapsed at times into coarseness and is not immune from monotony, but at their best his *Hesperides* and *Noble Numbers* are exceedingly beautiful, as is shown by Ye have been fresh and green, Bid me to live, Gather ye rosebuds, and Cherry-Ripe. An excellent modern edition of his

poems is that by A. W. Pollard, 1891 and 1898. See *Life*, F. W. Moorman, 1910.

Herries, LORD. Scottish title borne since 1567 by the family of Maxwell. Herbert Herries, of Terregles, Kirkcudbrightshire, was made a lord of parliament about 1490, and was succeeded in the title by his son and grandson. The latter left only a daughter, Agnes. She married John Maxwell, a younger son of Robert Maxwell, Lord Maxwell, and he was given the title of Lord Herries in 1567, ranking as the 4th lord. Herries appeared in public life as a reformer and a friend of Knox, but later he was one of the supporters of Queen Mary. He continued active in Scottish affairs until his death, Jan. 20, 1583.



11th Lord Herries
Elliott & Fry

The title passed to his descendants, one of whom, John, the 7th lord, inherited in 1667 the earldom of Nithsdale, becoming the 3rd earl. His grandson, the 5th earl, lost his titles for sharing in the Jacobite rising of 1715, and for long there was no Lord Herries. In 1858, however, it was decided that William Constable Maxwell was the rightful Lord Herries, and he became the 10th lord. In 1884 the 11th lord was made a baron of the United Kingdom, and on his death in 1908 the title passed to the lady who became later duchess of Norfolk. The estates of the Maxwells were in Kirkcudbrightshire.

Herring (*Clupea harengus*). Fish belonging to the same genus as the sprat and pilchard. It is found near the land in the northern parts of the Atlantic, but not in the Mediterranean. The genus contains about 60 species, most of them being available as food for man. The common herring is always found in schools

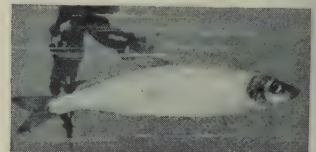
which swim near the surface of the sea, and are constantly moving from place to place following their food. The result is that the herring fishery is somewhat uncertain, a good fishing ground being often temporarily deserted for no apparent reason.

The herring feeds mainly on minute crustaceans, filtering them

out of the water by means of the gill-rakers at the side of the throat, which act as a kind of sieve like the baleen of the whale. It also eats small worms and the eggs and fry of its own and other species of fish. When alarmed, the herring will sometimes leap out of the water and be carried several feet through the air. There are two spawning seasons, summer and winter; but it has been discovered that the winter spawners belong to a different race from the others. Its eggs do not float on the surface, but adhere to the stones and weeds at the bottom of comparatively shallow water.

The summer eggs are deposited at some distance from the shore, but the winter ones are usually shed in brackish water about the mouths of rivers, and may even be found attached to the leaves of fresh-water plants. The average number of eggs deposited by the female is 30,000. These hatch in from ten days to a month, according to the temperature, and the young fish take from two to three years to become adult. Around the British coasts 12 ins. is a usual length for a full-grown fish, but in Iceland examples 17 ins. in length are often taken.

Economically the herring is an important food fish, owing to its nutritious qualities and its great



Herring. Specimen of the common herring found in the Atlantic and northern seas

abundance. It is specially numerous in the North Sea and along the E. coast of Scotland, and the fishery is carried on by boats from most of the countries of Northern Europe, especially Gt. Britain, Germany, and Holland. It is chiefly captured in the drift net, the seine being used in narrower waters, such as the sea lochs of Scotland. About 20 p.c. of the fish on the market are consumed fresh, the rest being salted and partly dried as bloaters or smoked as kippers and red herrings. See *Fisheries*; *Trawling*.

Herring Bone. Term used in architecture. It refers to courses of stone laid on the model of herring bones, i.e. those in one course are all placed obliquely to the right and those in the next course obliquely to the left, and so on. The term is also used for a kind of stitch used in dressmaking (g.v.).



Robert Herrick. Dean Prior Church, Devonshire, of which the poet was incumbent, and where he is buried

Herringham, Sir WILMOT PARKER (b. 1855). British physician. He was born April 17, 1855.



Sir W. P. Herringham,
British physician
Russell

Education at Winchester and Keble College, Oxford, he received his medical training at Oxford and S. Bartholomew's Hospital, of which institution he was appointed consulting physician. During the Great War he served as a consulting physician to the forces, and was made a major-general; he had been knighted in 1914. From 1912-15 he was vice-chancellor of the university of London. He published *A Physician in France*, 1919.

Herrings, BATTLE OF THE. Fought Feb. 12, 1429, between the English and the French, the latter aided by their Scottish allies. The English were besieging Orleans and a small force under Sir John Fastolf was carrying provisions from Paris to the army there. This was attacked by the French and Scots at Rouvray. The English formed a hollow square, the provision wagons being placed in the centre, and the enemy were beaten off. The battle was so called because the wagons contained quantities of salted fish for use during Lent. See *Hundred Years' War*.

Herschel, Sir JOHN FREDERICK WILLIAM (1792-1871). British astronomer. Born March 7, 1792,

he was the only son of Sir William Herschel. Taking his degree as senior wrangler at Cambridge, he began a systematic study of the heavens in 1822, the results of which he presented to the Royal Society eleven years later. The whole of the northern hemisphere came under his survey, and he added over 500 nebulae and clusters of stars to those already known, as well as nearly 4,000 double stars. Early in 1834 he established an observatory at the Cape of Good Hope, in order to survey the southern hemisphere. Here his work continued for four years, the results of his labours being published in 1847.

Returning to England in 1838, he was created a baronet, became president of the Royal Society and the Royal Astronomical Society, and



John Herschel

received numerous honours from universities and scientific societies. Herschel wrote an *Outline of Astronomy*, 1849, and contributed articles on the theory of light and sound, and on the study of Natural Philosophy, to the current encyclopedias. In 1850 he was appointed master of the mint, resigning in 1855. He died May 11, 1871, at Collingwood, Kent. See *Astronomy*; consult also *The Herschels* and *Modern Astronomy*, A. Clerke, 1895.

Herschel, LUCRETIA CAROLINE (1750-1848). Astronomer. Sister of Sir William born March 16,

1750, at Hanover, and came to England in 1772, becoming assistant to her brother. On his appointment as private astronomer to George III, she was given a small salary, and carried out a series of independent observations under his instructions. An indefatigable worker, she discovered five new comets and a number of nebulae and star clusters. She added 561 stars to the catalogue published by Flamsteed, and on the death of her brother she returned to Hanover, where she died Jan. 9, 1848. See *The Herschels* and *Modern Astronomy*, A. Clerke, 1895.

Herschel, Sir WILLIAM (1738-1822). Astronomer. Born at Hanover, Germany, Nov. 15, 1738, he came to England in 1757, earning a poor livelihood by teaching music. In his spare time he studied astronomy, and in 1774 he made his first telescope. His success with this instrument encouraged him in the making of others, and throughout his life he was constantly concerned with their manufacture and improvement. Although he did a great deal of work on various types of telescopes, his reputation will remain connected with his discovery of the planet Uranus in 1781. This discovery brought him many rewards, including the Copley medal and the fellowship of the Royal Society.

In 1782 Herschel received the appointment of private astronomer to George III, and in the years following honours



Caroline Herschel,
Astronomer
After M. G. Tietelman

were showered on him by British and foreign universities and scientific societies for his brilliant astronomical researches. He contributed nearly 70 papers to *The Philosophical Transactions*, all of them showing a remarkable power of reasoning. His systematic search of the heavens not only resulted in the discovery of a large number of double stars, and of the new planet Uranus, but also of two new satellites of Saturn.

To Herschel is due the first computation of the period of rotation of the planet Saturn, that of the motions of binary stars, and the path of the solar system through the heavens. He increased the number of known nebulae from 180 up to 2,500 by his researches. A physicist and astronomer of the very first rank, Herschel was ably assisted in his researches by his sister Caroline. He died Aug. 25, 1822, at Slough. See *Astronomy*; consult also *Life and Works*, J. L. E. Dreyer, 1912.

Herschel, Sir WILLIAM JAMES (1833-1917). British civil servant. The son of Sir J. F. W. Herschel, the astronomer, after graduating at Oxford he entered the Indian civil service in 1853, and was appointed to the Hooghly district, where he was stationed during the Mutiny. The proceedings following this (1859) led him to establish his system of finger print identification, which was introduced for civil purposes in Bengal in 1878. Commissioner of Dacca, 1872, and Cooch Behar, 1874, he retired in 1878. He succeeded his father as baronet, 1871, and died Oct. 24, 1917.

Herschell, FARREY HERSCHELL, 1ST BARON (1837-99). British lawyer and politician. Born Nov. 2, 1837, he was educated at a private school and at University College, London, was called to the bar from Lincoln's Inn in 1860, and in 1872 was made a Q.C. In 1874 he entered the House of Commons as M.P. for Durham, and in 1880 became solicitor-general.

In 1886 he was made lord chancellor and was created a baron. He retained the woolsack for only a few months, after which he was one of Gladstone's band of followers. He again became lord chancellor from 1892 until 1895. In 1898 he represented Great Britain on the arbitration over the boundary of Venezuela, and he was



1st Baron Herschell,
British lawyer
Downey



Wm Herschel
After J. Russell, R.A.

in the U.S.A. on this business when he died March 1, 1899, at Washington. His many honours included the chancellorship of London University. Richard, the 2nd baron (b. 1878), was a lord-in-waiting.

Herstal OR HERISTAL. Town of Belgium. It is 2 m. from Liège, of which it is practically a suburb. Before the Great War it was an industrial centre, having manufactures of iron and steel goods, notably bicycles, while the Belgian government had establishments here for making firearms and other munitions. During the war the town was in the possession of the Germans; they vacated it after the armistice, Nov., 1918, and its industries were soon re-started. Herstal is historically interesting because here was born Pepin, the ancestor of Charlemagne, who is usually known as Pepin of Herstal.

Hertford. Mun. bor., market and co. town of Hertfordshire, England. It stands on the Lea,



Hertford arms

24 m. N. of London, on the G.N. and G.E. Rlys. Picturesquely situated, it contains a large shire hall, corn exchange, public library, and art school. Of its churches, that of All Saints, 1895, replaced an earlier structure destroyed by fire in 1891; that of S. Andrew is on the site of a building founded in pre-Norman times; and the Roman Catholic church occupies the site of a Benedictine priory founded in the time of William I. Here are Christ's Hospital girls' school, and a grammar school founded by Richard Hale in 1617.

The castle, built by Edward the Elder in 905, and several times reconstructed, has been of late years a private residence, and incorporates parts of the ancient stronghold, in which Isabella,

widow of Edward II, died in 1358; Henry IV, Elizabeth, and other sovereigns also resided in the castle, which was taken by the Parliamentary forces during the Civil War. Haileybury College is 2 m. to the S.E., and Panshanger, the former seat of Earl Cowper, is 2 m. to the N.W. The town suffered a good deal of damage during a Zeppelin raid in 1916.

Hertford's history goes back to the time of King Alfred. It has a large agricultural trade, and brewing, malting, and iron-founding industries, and gives its name to a co. div. returning one member to Parliament. Market day, Sat. Pop. (1921) 10,712.

Hertford, MARQUESS OF. British title borne since 1793, and also earlier, by the family of Seymour. Francis Seymour, a son of Sir Edward Seymour and a descendant of the protector Somerset, inherited the estates of a cousin, the earl of Conway. In 1703 he was made Baron Conway. In 1750 his son Francis, 1718-94, was made earl of Hertford, and in 1793 earl of Yarmouth and marquess of Hertford. He was viceroy of Ireland, and held other offices during a long public life. He was succeeded by his son, Francis, as 2nd marquess. The latter's son and grandson, the 3rd and 4th marquesses, were men of some note. The 5th marquess, a general in the army, was a cousin of the 4th, and from him the title passed to its present holder. The family seat is Ragley Hall, Warwickshire, around which the estates lie. The eldest son is known as the earl of Yarmouth.

Before 1793 there had been earls and marquesses of Hertford. The early earls were members of the great family of Clare, who held the earldom until the death of Earl Gilbert at Bannockburn, in 1314. In 1537 the Seymours began their connexion with this title. Edward Seymour, afterwards the protector Somerset, was then made earl, and

the title passed to his son Edward, who, having lost it, regained it in 1559. His grandson, William Seymour, was made marquess of Hertford and duke of Somerset, and the two titles remained united until the 4th duke of Somerset died in 1675. The marquessate then became extinct. See Seymour; Somerset, Duke of.

Hertford, FRANCIS INGRAM SEYMOUR, 2ND MARQUESS OF (1743-1822). British peer. The eldest son



2nd Marquess of Hertford, British peer
After Reynolds

of the 1st marquess, he was born Feb. 12, 1743. Educated at Eton and Christ Church, Oxford, he was an Irish M.P. 1761-68, and chief secretary to the lord-lieutenant. 1765-66. In

1766 he was elected to the British House of Commons, where he was fairly prominent in debate, advocating liberal ideas such as toleration of Roman Catholics. From 1774-80 he was a lord of the treasury, and in 1794 he became marquess of Hertford. From 1804-6 he was master of the household, and from 1812-21 lord chamberlain. He died June 17, 1822.

Hertford, FRANCIS CHARLES SEYMOUR CONWAY, 3RD MARQUESS OF (1777-1842). British peer. Born March 11, 1777,

he was the only son of the 2nd marquess and his wife, the daughter of the last Viscount Irvine, from whom came much of his great wealth. Educated at Oxford, he was an M.P.



Hertford
After Lawrence

before succeeding to the title in 1822. He lived the life of a man of pleasure, and is the original of the marquess of Steyne of Vanity Fair and of Lord Monmouth of Coningsby. He died in London, March 1, 1842. The marquess married an heiress, Maria Fagnani, daughter of G. A. Selwyn, and had two sons. Richard Seymour Conway (1800-70), the elder, who became the 4th marquess, was a collector of pictures and works of art, which now form part of the Wallace Collection (q.v.).

Hertford College. College of the university of Oxford. It dates from about 1283, when Elias de Hartford founded a hall for students known as Hart or Hertford Hall. It became a college in 1740, but was dissolved in 1805, and later its buildings and property were



Hertford College arms



Hertford. Old houses in St. Andrew's Street
Valentine

acquired by Magdalen Hall. In its turn Magdalen Hall was dissolved in 1874, when a new charter was

Middlesex, E. by Essex, N.W. by Bedfordshire, and S.W. by Buckinghamshire.



Hertford College, Oxford. The quadrangle seen from the chapel, with the hall on the left

FRITH

obtained establishing Hertford as its successor and giving it all the privileges enjoyed by the other colleges. T. C. Baring, M.P., provided funds for its endowment. The society consists of a principal, fellows, and scholars, and its buildings, all modern, are at the corner of Broad Street and New College Lane.

Hertford House. Name of two London mansions, both associated with the Seymour family. The house at 105, Piccadilly, was sold to Sir Julian Goldsmid, after whose death it became the home of the Isthmian Club, which vacated it in 1920, the mansion being afterwards put up for sale. That in Manchester Square, W., was begun in 1776 by the 4th duke of Manchester, after whom it was first named. In 1788 it became the Spanish embassy; later it passed to the 2nd marquess of Hertford, whose second wife was the attraction that drew George IV to become an almost daily visitor. It was under the patronage of Lady Hertford that Theodore Hook here made his entry into fashionable life.

The 4th marquess bequeathed the house and his famous art treasures to Sir Richard Wallace, who reconstructed the building for their accommodation in 1875, and whose widow in 1897 bequeathed them, with additions, to the nation. Hertford House was bought by Parliament and opened as a public art gallery in 1900. During the Great War much of the collection was removed to a place of safety and the emptied rooms used by the admiralty and, later, the ministry of munitions. See Wallace Collection.

Hertfordshire or **HERTS.** S. Midland county of England. One of the six home counties, it has an area of 632 sq. m. and is bounded N. by Cambridgeshire, S. by

shire, part of the chalk range of E. England; the county is generally undulating, and has a dry soil.

Of its 17 small streams the more important are the Colne and Lea. The former rises between Hatfield and St. Albans, is joined by the Ver near Watford, and the Gade and Chess at Rickmansworth, and then enters Middlesex. The Lea, the largest river of the county, rises



Hertfordshire arms

in Bedfordshire and enters Essex at Waltham Abbey. Nearly parallel with the Lea is the artificial New River which, fed by springs near Hertford, brings water to London. The Grand Junction Canal passes through Rickmansworth, Boxmoor, and Berkhamstead.

Agriculture, market gardening, and the cultivation of fruit for the London market are leading pursuits; permanent pasture abounds, and hay is largely produced. There are no minerals of commercial importance and no manufactures on

an extensive scale. The industries include straw-plaiting, paper-making, malting, brewing, lace and silk, and there are agricultural machinery and some minor manufactures.

The G.N.R., M.R., L. & N.W.R., G.E.R., Met. Rly., and an electric service from London to Watford afford excellent means of communication, which are supplemented by several motor-bus services. Of the roads the chief are the Old North Road, the Great North Road, and the Dunstable Road; and there are remains of three Roman roads, Watling Street, Ermine Street, and the Icknield Way. The chief towns are Hertford (co. town), St. Albans (a cathedral city), Watford, Hitchin, Barnet, Berkhamstead, Hemel Hempstead, Hatfield, Bishop's Stortford, and Ware.

The county was once part of Mercia and of Essex. St. Albans, as Verulamium, was a Roman city. William I held a council at Berkhamstead, where, as at Hertford, are remains of an old castle. Henry III had a palace at King's Langley. Elizabeth lived at Ashridge Park, was a prisoner at Hatfield, the historic home of the Cecils, and had a hunting lodge at Hunsdon. Rye House is associated with a plot to murder Charles II and James, duke of York. St. Albans and Barnet were the scenes of historic battles. Four members are returned to Parliament. Pop. (1921) 333,236.

LITERARY ASSOCIATIONS. Bacon lived at Gorbamby, took his title of viscount from St. Albans, and was buried in the church of S. Michael. Chaucer was a clerk at Berkhamstead Castle. With St. Albans are associated the names of Matthew Paris, Sir John Mandeville, Dr. Cotton, and the background of Dickens's novel, *Beak House*. Chapman lived at Hitchin; Young, author of *Night Thoughts*, was rector of Welwyn, and is buried

there. Cowper was born at Berkhamstead, and introduced Ware in his *John Gilpin*. Isaac Watts lived at Theobalds. Yarrell, the naturalist, was born at Bayford. Bulwer Lytton lived at Knebworth. With Charles Lamb are associated Mackery End and Widford. Sir John Evans, the antiquary, lived at Hemel Hempstead.



Hertford House, Manchester Square, London, in which the Wallace Collection is exhibited



Hertfordshire. Map of the county to the north of Middlesex, famous for its agriculture and market gardening

Mrs. Humphry Ward passed many of her later years at Tring. Hoddesdon has memories of Prior and Izaak Walton. See Highways and Byways in Hertfordshire, 1902, and Hertfordshire, 1903, H. W. Tompkins; Memorials of Old Hertfordshire, ed. P. C. Standing, 1905; The Victoria History of the Counties of England: Hertfordshire, 4 vols., ed. W. Page, 1902-14.

Hertfordshire Regiment. Regiment of the British Army, established under the Territorial Forces Act of 1907. It consists of territorial or volunteer battalions only. The first battalion was mobilised in August, 1914, and went to France before the end of the year. It was with the 2nd corps in the fighting around Ypres in Nov., and with the Guards in the attack on Festubert, May, 1915. In the third battle of Ypres, 1917, the Hertfordshires formed part of a force of Territorials that operated below Pilkem and towards the village of St. Julien. The regimental headquarters are at Hertford.

Hertha. Teutonic goddess. Called also Nerthus, she was the goddess of fertility. Our scanty information about her worship is derived from Tacitus, who, in his Germania, gives a brief account of certain mysterious ceremonies which took place on an unknown island, usually at night. Her statue was veiled.

Hertling, Count Georg Friedrich von (1843-1919). German statesman. Born at Darmstadt,

Aug. 31, 1843, he was educated at the universities of Münster, Munich, and Berlin, afterwards studying for two years in Italy. He was an unofficial professor at Bonn, 1867-



Count von Hertling, German statesman

80, when he became a professor at Munich. He had previously entered the Reichstag, and soon became the leader of the Centre or Catholic party. In 1891 he was Bavarian minister of state, and in 1912 became minister president of Bavaria. On the fall of Bethmann-Hollweg in July, 1917, he was offered the imperial chancellorship by William II and declined it; but when it was again offered to him he accepted it, and on Nov. 1 succeeded Dr. Michaelis. He resigned, however, Sept. 30, 1918, and died Jan. 4, 1919.

's Hertogenbosch, or BOIS-LE-DUC (Dutch and Fr., Duke's Wood). Town of the Netherlands, capital of N. Brabant. It

stands at the confluence of the Aa with the Dommel, 30 m. S.S.E. of Utrecht, and is a rly. junction. Its splendid Gothic cathedral of S. John, dating from the middle of the 15th century, was built on the site of an 11th century Romanesque structure, and is noted for its rich ornamentation, lofty nave with double aisles, and beautiful choir and pulpit. The Raadhuis, in the Great Market, contains numerous fine paintings, and the provincial museum houses many antiquities. Other buildings of note are the government buildings, court house, episcopal palace, arsenal, barracks, and grammar school.

Formerly strongly fortified, its defences were razed in 1876. Brewing and distilling are carried on, and the manufactures include cigars, linen, cutlery, and glass. A steam tramway connects with Helmond, 20 m. distant, while the Zuid Willems canal joins it to Maastricht and other places. The duke commemorated by the name is Godfrey of Brabant, who founded it in a wood in 1184, and afterwards granted it municipal privileges. Pop. 37,667.

Hertslet, Sir Edward Cecil (b. 1850). British civil servant. The son of Sir Edward Hertslet of the foreign office, and educated at King's College, London, he served in the foreign office, 1868-96, was consul-general at Havre, 1896-1903, and from 1903-19 was consul-general for Belgium. He was employed at Zürich, 1915-17, and at the foreign office during the remainder of the Great War. His activities in British and foreign photographic conventions and conferences gave him a distinguished position on the juries of various exhibitions, and he was royal commissioner of the exhibitions of Brussels, 1910, Turin, and Rome, 1911.



's Hertogenbosch. The cathedral of S. John, an 11th century foundation, rebuilt 1419-50

Hertz, HEINRICH RUDOLF (1857-94). German physicist. Born at Hamburg, Feb. 22, 1857, his name



Heinrich Hertz,
German physicist

will always be associated with the discovery of Hertzian waves of wireless telegraphy. In 1880 he became assistant to Helmholtz at the Berlin Institute, where he carried out a series of researches on electric discharge in gases. On his appointment to the professorship of physics in 1885 at Karlsruhe Polytechnic, inspired by the electro-magnetic theories of Maxwell, he began the study of electro-magnetic waves.

Hertz showed the refraction, diffraction, and polarisation of the electric waves and their correspondence with those of light and heat. The practical results he obtained, particulars of which he published in 1887, were no less brilliant than the profound mathematical researches of Maxwell. Their importance cannot be overestimated, for upon them has been based the whole of modern wireless communication. Till his death, Jan. 1, 1894, Hertz continued to publish regularly papers on his remarkable discoveries, and many were translated into English in 1896 by D. E. Jones and G. A. Schott. See Wireless Telegraphy.

Hertz, HENRIK (1798-1870). Danish poet and dramatist. Educated in Copenhagen, where he was born Aug. 25, 1798, he began to study law, but his early writings—among them *The Letters of a Ghost*, 1830, brought him into such prominence that, after a journey on the Continent at the public expense, he settled down to literature with a subsidy from the state and the title of professor. Among his best known poetical dramas are *Svend Dyring's House*, 1837, and *King René's Daughter*, 1845, Eng. trans. Theodore Martin, 1850, new ed. 1894. His Poems appeared 1851-62, and *Collected Dramatic Works*, 18 vols., 1854-73. He died Feb. 25, 1870.

Hertz, JOSEPH HERMAN (b. 1872). Jewish rabbi. Born in Hungary, Sept. 25, 1872, he was educated at Columbia University. He became a rabbi at Syracuse, New York, in 1894, and at Johannesburg in 1898. From



Joseph H. Hertz,
Jewish rabbi

1907-9 he was professor of philosophy at the Transvaal University College, became a rabbi at New York city in 1912, and was appointed chief rabbi of the British United Congregations in 1913. He wrote *The Ethical System of James Martineau*, 1894, and works on Jewish and educational subjects.

Hertzog, JAMES BARRY MUNNICK (b. 1866). South African statesman. Born in S. Africa of Dutch-

German stock, he was one of the Boer generals in the war, 1899-1902, afterwards becoming an ardent champion of the cause of the Boer nationalists. He was a member of the Union Cabinet, 1910-12, and as minister for education urged the claims of the Dutch language in the Orange River Colony. His animosity against Botha and Smuts, and his anti-British views, caused his retirement. In the Great War he and ex-president Steyn refused to denounce the rebellion of Beyers and De Wet in the autumn of 1914. He was elected leader of the Nationalist party in 1915, and advocated Dutch supremacy. At the general election of Feb., 1921, his party was beaten by the S. African party led by Smuts. In June 1924, as the result of the general election, he became prime minister.

Heruli or ERULI. Ancient Germanic people. Their original home was said to have been in the Cimbric Chersonese (Jutland). They are first mentioned in the 3rd century A.D. as inhabiting the steppes near the Black Sea and the Danube in alliance with the Goths. A warlike people, they were ready to serve any leader as mercenaries. In 476 they assisted Odoacer (Odaovac), called King of the Heruli, to overthrow the West Roman empire and to establish himself as ruler of its territories. After his downfall, the Heruli dispersed and, after many vicissitudes of fortune, disappeared from history in the early part of the 6th century. They are said to have adhered to paganism longer than any other Germanic people.

Hervas y Panduro, LORENZO (1735-1809). Spanish philologist. Born May 10, 1735, he became a Jesuit, and held professorships at Madrid and Murcia. On the expulsion of the order from Spain in 1767, he settled in Italy, where he produced his great work, *Idea of the Universe*, 1778-92, a treatise on cosmography in 21 volumes.



J. B. M. Hertzog,
S. African statesman

He also wrote *Catalogue of the known languages, and other works on philology*, to which study he gave a great impetus, especially in Italy. He was librarian of the Quirinal Palace, Rome, from 1803 until his death, Aug. 24, 1809.

Hervé, GUSTAVE (b. 1871). French socialist. Born near Brest, Hervé entered the teaching profession, but lost a post held at Sens by reason of his outspoken anti-militarism. In 1905 he was imprisoned for similar attacks on French policy, but pressure of radical opinion enforced his release. Other prosecutions followed, and in 1910 he was sentenced to four years' imprisonment, which was not, however, enforced. His name had meanwhile become well known by his conduct of *La Guerre Sociale*, a strongly socialist and anti-militaristic journal founded in 1905.

But on the outbreak of the Great War Hervé upheld his country's cause with no less enthusiasm than he had previously shown in denouncing it, and volunteered for service. His paper was renamed *La Victoire*. Among his writings are *Mes Crimes*, 1912, a trenchant plea for the liberty of the press, and *Après La Marne*, 1915, one of several volumes of reprinted war articles.

Hervey, ARTHUR (b. 1855). British composer and critic. Born in Paris, Jan. 26, 1855, of Irish



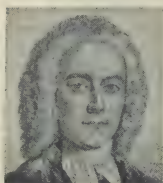
Arthur Hervey,
British composer

descent, he was educated at the Oratory School, Birmingham. He then studied music, and soon began to compose, his works including orchestral compositions, tone poems, an opera, *Ilona*, and many songs. His *Life Moods*, orchestral variations, were played at the Brighton Festival in 1910. He also wrote books on French music, and from 1892-1908 was musical critic *The Morning Post*, having served *Vanity Fair* in a like capacity. Among his books are *French Music in the Nineteenth Century*, 1903, and studies of Alfred Bruneau, Franz Liszt, and Rubinstein.

Hervey, JAMES (1714-58). English clergyman and devotional writer. Born at Hardingstone,



Gustave Hervé,
French socialist

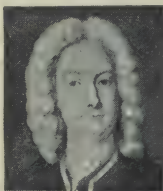


James Hervey,
English clergyman
From an engraving

Later he attached himself to the Calvinists. He succeeded to his father's livings at Weston Favell and Collingtree, was remarkable for his benevolence, and died on Dec. 25, 1758.

His works include *Meditations and Contemplations*, 1746-47, which contain *Meditations* among the Tombs, turgid and unnatural in style, but once extraordinarily popular; and *Dialogues between Theron and Aspasio*, 1755, which led to a controversy on the nature of faith with Robert Sandeman (*q.v.*), Hervey contending that justification by faith meant appropriation; Sandeman, that the vital thing was not the manner of believing, but the matter of belief. See *Life and Letters*, T. Birch, 1782; *Works*, 6 vols., 1769.

HERVEY, JOHN HERVEY, BARON (1696-1743). English politician and author. Son of John Hervey,



1st Baron Hervey
After Vanloo

earl of Bristol, he was born Oct. 15, 1696, belonging to the family of whom it was said that God made men, women, and Herveys, so notable was their pride. He was educated at Westminster and Clare Hall, Cambridge, after which he married Mary, or Molly, Lepell, like himself a member of the court of the prince of Wales, afterwards George II. In 1725 he entered Parliament, attaching himself to Sir Robert Walpole. The confidence of Queen Caroline gave him political importance, both before and after he became lord privy seal in 1740.

In 1733 he was made a baron, but he did not live long enough to inherit his father's earldom, dying Aug. 5, 1743. Three of his sons became in turn earl of Bristol. As a writer, Hervey is chiefly known for his *Memoirs of the Court of George II*, which show the king and his son Frederick, prince of Wales, in a very unfavourable light. They were edited by J. W. Croker, 1848. Hervey was satirised

by Pope, to whom he replied with almost equal bitterness. See *Bris- to*, Marquess of.

Hervey Archipelago. Group of islands in the Pacific Ocean, also known as Cook Islands (*q.v.*).

Hervey Bay. Bay on the coast of S. Queensland, Australia. The east side is formed by Great Sandy Island, one of the sandy islands which interfere with coastal navigation. On the west side is the sugar and cattle-rearing area, of which the commercial centre is the small port of Bundaberg, which is situated at the beginning of the bay, here some 50 m. across. At the head of the bay in the south a narrow sea channel separates Gt. Sandy Island from the district of Maryborough.

Hervier, LOUIS ADOLPHE (1821-79). French painter and etcher. Born at Paris, he studied under Léon Cogniet and Eugène Isabey. The rare quality of his designs, etchings, and lithographs was not appreciated during his life by the Salon juries, who refused his work twenty-three times. One or two series of lithographs published after his death, notably those of *Les Misérables* and *La Mendiante*, proved his exceptional gift.

Hervieu, PAUL ERNEST (1857-1915). A French dramatist and novelist. Born at Neuilly-sur-Seine, Nov. 2, 1857, he was educated for the law, and called to the bar in 1877. Later he entered the diplomatic service, but in 1881, on being appointed to the secretaryship of the



Paul Hervieu

French legation in Mexico, he resigned and thenceforward devoted himself to journalism and literature. His first novel, *Diogène-le-Chien*, 1882, was followed by a collection of journalistic narratives, *La Bêtise Parisienne*, 1884; *L'Inconnu*, 1887; *Flirt*, 1890; *Peints par Eux-Mêmes*, 1893; and *L'Armature*, 1895.

In his stories he showed close knowledge of life, and charming literary fancy. Having established himself as a novelist, he won fresh and greater fame as a dramatist, his principal plays being *Les Paroles Restent*, 1892; *Les Tenailles*, 1895; *La Course du Flambeau*, and *L'Enigme*, 1901, produced in English as *Caesar's Wife*, in the following year; *Thé- roigne de Méricourt*, 1902; *Le Dédale*, perhaps his best, 1903; *Le Réveil*, 1905; *Connais-Toi*, 1909.

He was elected to the French Academy in 1900. His collected plays were published in 3 vols., 1900-4. He died Oct. 25, 1915.

Herwarth von Bittenfeld, KARL EBERHARD (1796-1884). Ger- man soldier. Of good family, he



Herwarth von
Bittenfeld,
German soldier

entered the army of Prussia in 1811 and saw his first fighting in the war of liberation of 1813-14. He rose high in the service during the years of peace, attaining the command of an army corps in 1860. This was partly due to his position as an officer of the guards, which brought him into contact with the king, especially when he was commanding his regiment in Berlin during the troubles of 1848. In 1864 Herwarth was in command of the Prussian army that, fighting Denmark, made its way across to Alsens. He commanded an army in the war of 1866 against Austria, led it through Saxony into Bohemia, fighting two battles and taking part in the final victory of Sadowa. In the war against France he was employed at home, his work being that of a quartermaster-general. In 1871 he was made a field-marshal. He died at Bonn, Sept. 2, 1884.

Herzegovina. District of S.E. Europe. It lies on the N.W. of the Balkan Peninsula, and is surrounded by Bosnia, Serbia, Montenegro, and Dalmatia. It consists of mountains rising to a height of 8,000 ft., and forming part of the Dinaric Alps, with high forested valleys and cultivable plateaux in between. It is watered by the Narenta, on which is its chief town, Mostar. It produces barley, tobacco, timber, excellent wine, and much fruit. Cattle, goats, and pigs are raised in considerable quantities. Minerals are abundant, but little worked. Its area is 3,562 sq. m.; pop. about 200,000.

During the Roman period it was at various times included in Illyria, Pannonia, and Dalmatia. After its conquest by the Turks it was a Turkish province. As a result of the Berlin Congress, July, 1878, it was handed over, with Bosnia, to Austria, who annexed both and formed them into the provincial government of Bosnia-Herzegovina in 1908. In 1918-19, after the fall of the Austrian Empire, Herzegovina became a portion of the new kingdom of the Serbs, Croats, and Slovenes. See *Austria*; *Yugo-Slavia*.

Herzen, ALEXANDER IVANOVITCH (1812-70). Russian publicist. Born at Moscow, the natural son of a rich nobleman, Yakovlev, he was exiled at the age of 23 to Siberia on account of his advanced views. In 1838 he married, and in 1841 was exiled to Novgorod. In 1842 he returned to Moscow, and published *Annals of the Fatherland*, *Letters on the Study of Nature* (under the pseudonym Iskander), and two novels, *Whose Fault?* and *Doctor Kroupov*, 1845-46.

Herzen's father leaving him a fortune, he removed to Paris, whence he was banished, and went to Nice. In 1850 he published, in German, *Vom andern Ufer* (From the other shore), in which he proclaimed the end of the old European system and its regeneration by the Russian community. Then came, in French, *Du Développement des Idées Révolutionnaires en Russie*, 1851, Eng. trans. 1853.

Herzen removed to London, where he set up a Russian printing press and started a revolutionary periodical, *The Polar Star*. He published his memoirs, *My Exile*, 1855, and on July 1, 1857, began the issue of a weekly revolutionary journal, *Kolokol* (The Bell), which was smuggled into Russia in hundreds of thousands. In 1859 he published, in English, *Memoirs of Catherine II and the Princess Dachkov*. Coming under the influence of Bakunin, Herzen adopted extreme views which greatly diminished his influence. He died in Paris, Jan. 21, 1870.

Heshbon. Ancient city of Palestine. It stood at the N.E. corner of the Dead Sea, and was the capital of Sihon, king of the Amorites, and was captured by the Israelites on their way to Canaan. (Numb. xxi, 25).

Hesiod (fl. c. 700 B.C.). Greek didactic poet. He lived at Ascra, at the foot of Mt. Helicon, in Boeotia, his father having been an immigrant from Kynē, in Asia Minor. Details of his life are obscure, but there is reason to believe that he lost his patrimony in a lawsuit against his brother, Perses, who bribed the judge. As a result of this, Hesiod removed to the neighbourhood of the Gulf of Corinth, where he spent the rest of his life, until, according to legend, he was murdered.

A farmer by profession, one of his poems, *Works and Days*, is a didactic poem, part of which is largely a manual of agriculture, to which Virgil is much indebted. *Works and Days*, however, is a composite poem, another part of it consisting of a sort of moral essay on the dignity of labour, and the injustice of rulers and judges.

Hesiod's other surviving poem, *Theogony*, is an account of the creation of the world, and a history

of the gods and demi-gods. The two poems *The Shield of Heracles* and *The Contest of Homer and Hesiod* are not genuine. In later ages

Hesiod was much used as a school book. The best edition of the text with English notes is that of Paley, 1883, and there are prose translations in Bohn's Classical Library, by J. Banks, and by A. W. Mair, 1908.

Hesione. In Greek mythology, daughter of Laomedon, king of Troy. Poseidon and Apollo, offended by Laomedon, sent a monster to whom yearly a maiden had to be sacrificed. Hesione was about to suffer this fate when she was rescued by Hercules, who slew the monster with his club. Hercules had been promised a team of beautiful horses as a reward, but Laomedon refused to keep his promise. Hercules, therefore, killed the deceitful king, set Priam on the throne in his stead, and married Hesione to his friend Telamon. *Pron.* Hē-si-onee.

Hesperia (Gr. *Hesperos*, evening star). Term applied by the Greek poets to Italy as being the western land. Roman poets sometimes applied the name to Spain.

Hesperian. British steamship. Belonging to the Allan line, she was torpedoed and sunk without warning by a German submarine, Sept. 4, 1915, while bound from Liverpool to Montreal.

Hesperides. In Greek mythology, nymphs who guarded the golden apples of Hera (*q.v.*). Their gardens were variously fixed in the Far West by different legends. The quest of three of these golden apples was one of the twelve labours of Hercules. The name was chosen by Herrick (*q.v.*) as title for a series of his poems.

Hesperornis (Gr. *hespera*, evening, west; *ornis*, bird). One of the fossil birds of the Cretaceous system. It is remarkable for possessing teeth, and so showing the descent of birds from reptiles. Only extremely rudimentary remains have been found in Kansas, but from these have been deduced the facts that the bird was 3 ft. high, and probably a strong swimmer, though unable to fly. See *Odontornithes*.

Hesperus. In Greek mythology, the name of the evening star. See *Venus*.



Hesiod, Greek poet
From a bust

Hess. Name of a family of German artists. Peter von Hess was born at Düsseldorf, son of a painter and engraver, July 29, 1792, and, having served with the Bavarian army during 1813-15, became well known as a painter of battle scenes. Examples of his spirited work are to be found at Berlin and Munich. He died at Munich, April 4, 1871. Heinrich Maria von Hess was born on April 19, 1798, studied in Munich and Rome, and became director of the Munich galleries. His work was chiefly of a religious character, notable examples being decorations in the chapel of All Saints and the basilica at Munich. He died there on March 29, 1863. Another brother, Karl (1801-74), was an attractive painter of Alpine landscapes and genre pictures, some of which are in the National Gallery, Berlin.

Hesse. State of the German republic, until 1918 a grand duchy. In the west of the country, its area is 2,970 sq. m., and it has a population of 1,280,000. It is divided into three provinces, Upper Hesse, Rhenish Hesse, and Starkenburg, and 19 Kreise or circles. Part of Prussia separates Upper Hesse from the others, and the republic has small, isolated pieces of territory elsewhere, one being Wimpfen. The Rhine and the Wettau flow through the state. There are a number of hills, but much of the land is flat. Darmstadt is the capital, and before 1866, when there were several states of Hesse, the grand duchy was known as Hesse-Darmstadt. Mainz is the largest town; others are Offenbach, Worms, and Giessen. Agriculture is the main occupation, rye, barley, potatoes, and vines being largely grown. Coal and iron are mined. The republic is governed by a ministry responsible to a Landtag of 70 members, the largest party therein being the Socialists.

The name of Hesse is that of a Frankish tribe, the Hessi, who gave their name to a district much larger than the present republic. Hessegau, as it was called about the 8th century, was in the kingdom of the Franks, in the empire of Charlemagne, and in that of Otto the Great. Its early boundaries were never exactly defined, but it was the region watered by the Fulda, Werra, Lahn, and Eder, while it included the important places, Fulda, Hersfeld, and Marburg. It had its own counts, but from about 1140 until 1247 was under the rule of the landgraves of Thuringia. About 1265, Henry, a son of the duke of Brabant, became ruler of Hesse, and from that

time it has a history of its own. He called himself landgrave, and was made a prince of the empire.

The rulers of Hesse lived and fought very much as did the other German princelings of the Middle Ages. They divided their lands to form principalities for their sons, but such divisions were not always permanent. The first Landtag appeared about 1387, and gradually the landgraves won their way to the front rank of German princes. The most notable of them was Philip, who figured largely in the events of the Reformation; one of his predecessors had been a candidate for the office of king.

When Philip died in 1567, an important division of Hesse took place. To provide for his four sons it was divided into Hesse-Kassel, Hesse-Darmstadt, Hesse-Marburg, and Hesse-Rheinfels. Hesse-Homburg was founded in 1622, Hesse-Philippsthal in 1685, and Hesse-Barchfeld in 1721. Hesse-Marburg, Hesse-Rheinfels, and Hesse-Homburg, their ruling families having died out, were soon united with Hesse-Darmstadt or Hesse-Kassel. Hesse-Kassel was seized by Prussia after the war of 1866; the two other principalities had lost their status in the Napoleonic upheaval.

Hesse-Darmstadt thus became the only Hesse. Its connexion with Prussia became closer, and in the war of 1870-71 its troops fought under Prussian generals. The grand-duchy joined the new German Empire in 1871, and as such took part in the war of 1914-18. In 1918 the grand duke, Ernest Louis, abdicated, and a republic was proclaimed. The old constitution of two houses, one consisting of hereditary, ecclesiastical and nominated members, and the other of 50 members chosen by indirect election, was abolished in 1919. *See* Germany.

Hesse - Darmstadt. Name borne until 1866 by the German state which is now Hesse. It dated from 1567, when on the death of the landgrave, Philip of Hesse, his lands were divided; his son, George, made Darmstadt the capital of the share he received, his little state being therefore known as Hesse-Darmstadt. He and his successors added to its area, especially when other branches of the family died out. In the 17th and 18th centuries the landgraviate shared in the general history of Germany, largely a record of civil strife or of wars against France.

Louis, who became landgrave in 1790, fought against France until 1799, but was afterwards on the side of Napoleon. For this Mainz, Worms, and other districts were given to him in 1803, and the

title of grand-duke in 1806. He deserted Napoleon in 1813, and at the congress of Vienna Hesse became the size it retained until 1866. This state joined the Germanic Confederation (1815-66), the Prussian Zollverein, and received a constitution in 1820. There were troubles between ruler and ruled, especially in 1848. In 1866 the grand-duke took the side of Austria. Consequently, after Prussia's victory, a large indemnity was demanded and paid, while Hesse-Homburg, just added to the grand duchy, was taken away.

Hesse-Homburg. Formerly a state of Germany, now part of Prussia. It consisted of a district round Homburg that was separated from the present state of Hesse-Darmstadt in 1622. It had its own rulers or landgraves, but these did not become independent of the landgrave of Hesse-Darmstadt until 1768. Hesse-Homburg was included in Hesse-Darmstadt, 1806-15, when its independence was restored, and Meisenheim, a small district on the other side of the Rhine, was added to it. In March, 1866, the landgrave Ferdinand died without sons and his territory was divided. The ruler of Hesse-Darmstadt secured Hesse-Homburg proper, while Meisenheim became Prussian. A few months later Prussia took Hesse-Homburg also, this being part of her acquisitions after the war of 1866. The landgraviate had an area of about 100 sq. m.

Hesse-Kassel. State of Germany that existed from 1567 to 1866. In 1567 the landgrave of Hesse, Philip, died, and his land was divided between his four sons. The largest share, which was taken by the eldest William, had Kassel for its capital, and was, therefore, known as Hesse-Kassel. In 1848, at the end of the Thirty Years' War, the territory was enlarged, and there were various later alterations of its boundary.

In the 18th century the rulers obtained money by hiring their soldiers to fight the battles of others, and Hessians fought for Britain in the war of American Independence and elsewhere. In 1785 William became landgrave, and in 1803 he was made an elector by Napoleon. In 1807 Hesse-Kassel was included in the kingdom of Westphalia, but it was restored to William in 1814; the title of king was, however, refused to him. Then, as elsewhere, followed grave internal troubles due to the desire of the people for a share in the government and to the refusal of the ruler to grant it. A constitution was given in 1831,

but everything possible was done to nullify it, and there was again serious trouble in 1848. After trying to rule by force, the elector Frederick William fled from the country which was entered by Austrian and Bavarian troops. Prussian troops also invaded Hesse, but the upshot was not war between the two parties, but the convention of Olmutz; Hesse was entrusted to the diet of the German Confederation which gave to it a new constitution. The elector, who had returned, refused to adapt his policy to the new conditions, and there was friction for a further decade. In 1866 he took sides with Austria against Prussia, and as a result Hesse-Kassel was occupied by troops of the latter power. By the treaty of peace it was annexed to Prussia.

The electorate was not a single district, but several detached areas, this being due to the way they were acquired. It had in 1866 an area of 3,700 sq. m. and a pop. of about 750,000.

Hesse-Nassau. Province of Prussia. It lies between the Rhine and Thuringia, its other boundaries including Bavaria and Westphalia, and is of very irregular shape, while detached portions of territory belong to it. Its area is 6,060 sq. m., and its pop. 2,220,000. It is divided into the governments of Kassel and Wiesbaden. In addition to these towns it includes Frankfurt, Fulda, Homburg, and Marburg. The Lahn and the Fulda flow through it, while the Rhine and the Main are on its borders. It is a hilly district, with many forests and some mining, in addition to agriculture. The province consists of territories gained by Prussia after the war of 1866. These were Hesse-Kassel, much of Frankfurt, Hesse-Homburg, the duchy of Nassau, and other spoils.

Hesse-Rotenburg. German state that existed from about 1700 to 1834. Ernest, a younger son of the landgrave of Hesse-Kassel, received a younger son's portion. This he increased, and on his death it was divided into two, one being Hesse-Rotenburg, a small district around Rotenburg, his capital. In 1801 part of the state was taken by France, the landgrave being compensated by other territory. In 1834 the ruling family became extinct, and Hesse-Rotenburg was united with Hesse-Kassel.

Hessian Boot. High boot worn over tight pantaloons and bearing a tassel in front. Named probably from Hesse, in Germany, it was introduced early in the 19th century as a modification of the 18th century top-boot, and worn with

outdoor dress it formed for a time part of the dress of English general officers until superseded by the Wellington boot. *See* Boots and Shoes, colour plate.

Hessian Fly (*Cecidomyia destructor*). Dipterous insect of the gall midge group. One of the most



Hessian Fly. A destructive midge, greatly enlarged

destructive farm pests in the world, it resembles a minute gnat, not quite $\frac{1}{16}$ in. in length, and deposits its eggs on the leaves of wheat and other cereals. These hatch in a few days, and the larvae travel down inside the leaf sheath and make their abode just above one of the nodes of the stem. They feed on the plant for about three weeks, and then pupate and turn into the imago.

The adult stage lasts only a few hours, during which time mating takes place and the eggs are deposited. There are from one to six broods in the year, and the mischief done to the crops is sometimes enormous. In 1900 the total damage done in America by this insect was estimated at £20,000,000. It first appeared in Great Britain in 1886, but has not become common.

Hessle. Town and urban district of Yorkshire (E.R.). It stands on the Humber, $4\frac{1}{2}$ m. S.W. of Hull, of which it is practically a suburb, and is a station on the N.E. Rly. The council owns a public hall, and has laid out 10½ acres as a recreation ground. Market day, Tuesday. Pop. 5,300.

Hest Bank. Watering-place of Lancashire. It stands on Morecambe Bay, $3\frac{1}{2}$ m. from Lancaster, and has a station on the L. & N.W. Rly. The name of the parish in which it stands is Slynne with Hest. From here coaches formerly crossed the sands of Morecambe Bay to Kent's Bank, 9 m. away. Pop. 546.

Hestia (Gr., hearth). In Greek mythology, the goddess of the hearth. She was not only a domestic goddess, but in every town and state there was a hearth sacred to Hestia, the fire of which was never allowed to go out. Her Roman counterpart was Vesta.

Heston. Parish and village of Middlesex, England. It is 12 m. W.S.W. of London on the Metropolitan Dist. Rly. Osterley Park,

in the vicinity, is the seat of the earl of Jersey. With Isleworth it forms the urban dist. of Heston and Isleworth, the council of which has established an electricity undertaking, public baths, and libraries. Pop. parish, 3,800; urban dist., 43,300. *See* Isleworth.

Heswall. Village of Cheshire, England. It is within the parish of Heswall-cum-Oldfield, and stands on the Dee estuary, with a station on the Birkenhead Rly. (L. & N.W.) and G.W. Rly. Pop. 3,600.

Hesychasts (Gr. *hēsychos*, quiet). Term applied to a school of Quietists among the Greek monks of Mt. Athos in the 14th century. They practised a kind of self-hypnotism by gazing fixedly at their own navels, searching the seat of the soul, and in this condition were supposed to receive spiritual illumination. They held that God dwells in eternal light; that this light is the vehicle of His activity; and that the light illuminates the souls of those who practise intense abstraction and self-denial. Their teaching gave rise to controversy in the Eastern Church.

Hesychius (5th century A.D.). Alexandrian grammarian. He was the author of a Greek lexicon, which is of great value for its collection of unusual words, and quotations from authors whose works have been lost. Hesychius was a heathen, and the work in its present form contains obvious traces of revision by a Christian scribe or grammarian. The source of the work is the lexicon of Diogenianus (2nd century), itself based upon an earlier one by Pamphilus (1st century). He is not to be confounded with Hesychius of Miletus, probably of the 6th century, author of a universal history from the earliest times down to the death of Anastasius, 518, part of which, dealing with the history of Constantinople, is still extant; and of an *Onomatologos* (list), or biographical dictionary of literary persons and others, much used by Suidas in his lexicon.

Hetaïrai or Hetaerae. Superior class of courtesans in ancient Greece who flourished especially at Athens and Corinth. Accomplished dancers and musicians, many of them were also highly educated. The most famous of them were Aspasia, mistress of Pericles, a woman of high intellectual gifts and great powers of fascination, and Phryne, who sat as a model to Apelles for his great picture of Aphrodite Anadyomenē (q.v.).

Heteropoda (Gr. *heteros*, other; *pous*, foot). Section of the Gastropoda in which the molluscs are adapted for free swimming at sea.

The foot is modified and flattened laterally to serve the purpose of a fin, and the animal swims with its lower side uppermost. They are met with at the surface of the warmer seas, usually in dense companies. The shell and tissues are transparent, so that the internal organs can be seen; and all the species are carnivorous. They are divided into three families, having respectively a coiled shell, a rudimentary one, and no shell. *See* Gastropoda.

Heteroptera (Gr. *heteros*, other; *pteron*, wing). Division of the Hemiptera, an order of insects, in which the wings are unlike. The fore-wings are chitinous at the base and membranous at the apex, being thus partly elytra, while the hind-wings are wholly membranous. They lie flat on the back, not sloping at an angle to form a kind of roof. Like all the hemiptera, they are provided with a rostrum or beak, and obtain their food by suction. Known as land bugs and water bugs, they include many families. The common bed bug belongs to this sub-order. *See* Insect.

Hetman (Ger. *Hauptmann*, head man or captain). Polish military title. In the old kingdom of Poland the head of the army bore the title of great hetman, but after the defeat and disbanding of the army in 1792 the rank ceased to exist. In its Russian form of *ataman* it has been employed from early times to designate the chief of the Cossacks. *See* Cossack.

Hetton. Urban dist. and parish (Hetton-le-Hole) of Durham, England. It is 7 m. S.S.W. of Sunderland, on the N.E.R. The neighbouring coal mines employ most of the inhabitants. Market day, Friday. Pop. 15,700.

Hendicourt. Village of France, in the dept. of Somme. It is 10 m. N.E. of Péronne and 1 m. W. of Epéhy. Captured by the British April 1, 1917, with Epéhy, it was a stage in the great March retreat, 1918, traversed by the British 9th and 21st divisions. It was taken by the British Aug. 30, 1918, lost again the same day, and finally recovered Sept. 1. *See* Arras, Battles of; Bapaume, Battle of; Somme, Battles of the.

Heulandite. Name of a hydrous calcium and aluminium silicate. It is a white, pearly white, and occasionally red mineral of the zeolite group, first separated from stilbite by A. Breithaupt in 1818. Heulandite is found in cavities of igneous rocks, in particular in Iceland, Faroe Islands, Kilpatrick and Campsie Hills, and Skye in Scotland. It occasionally occurs in granite and gneiss. *See* Stilbite; Zeolite.

Hever Castle. Residence of Viscount Astor (*q.v.*), near Edenbridge, Kent. In Edward III's time a castle was built here by Sir William de Hevre, and in the 15th century a new one was erected by Sir Geoffrey Boleyn, a former lord mayor of London, who had bought the estate. Here his descendant Anne Boleyn lived, and her ghost is said still to haunt the place. The castle fell into decay and was later restored. It was purchased about 1890 by W. W. Astor, afterwards 1st Viscount Astor. He modelled it in accord with its original design, and it is now a perfect model of the late medieval castle. See Anne Boleyn.

Hewart, GORDON HEWART, BARON (b. 1870). British lawyer. Born at Bury, Jan. 7, 1870, he was educated at Manchester Grammar School and University College,



Baron Hewart,
British lawyer

Oxford. After a journalistic career he turned to the law and was called to the bar in 1902. He became a K.C. in 1912, in which year he first appeared as a parliamentary candidate for a Manchester division. In 1913 he was returned as Liberal M.P. for Leicester at a by-election. In 1916 he joined the Coalition government as solicitor-general, and in Jan., 1919, was promoted attorney-general. In 1922 he became lord chief justice and Baron Hewart of Bury.

Hewitt, MAURICE HENRY (1861-1923). British novelist and poet. Born in London, Jan. 22, 1861, he was called to the bar in 1891, and held a post in the Civil Service, 1896-1900. He established his reputation in 1898 with *The Forest Lovers*, a romance of the kind of vague medievalism which William Morris had already initiated. His other stories include the beautiful *Little Novels of Italy* (with the dainty Madonna of the Peach Trees), 1899; *Richard Yea and Nay* (*Cœur de Lion*), 1900; *New Canterbury Tales*, 1901; *The Queen's Quair*, 1904; *The Fool Errand*, 1905; *The Stopping Lady*, 1907; *Brazenhead the Great*, 1911; *A Lover's Tale*, 1915; and *Mainwaring*, 1921. He has also written some beautiful



M. Hewitt
Beverford

verse, including *Pan and the Young Shepherd*, 1898; *The Song of the Plow*, 1916; and essays, *In a Green Shade*, 1920. He died June 16, 1923.



Hever Castle, Kent, once the residence of Anne Boleyn. It was restored by Viscount Astor

Hexachord (Gr. *hex*, six; *chorde*, chord). Scale of six notes. It was established by Guido d'Arezzo for the purposes of his teaching of solmisation, thus superseding the Greek system of tetrachords. The term is sometimes used to denote a six-stringed lyre; occasionally, to express the interval of a sixth.

Hexagon. Plane figure having six sides and six angles. A regular hexagon has six angles, each 120°, and six sides each equal to the radius of the circumscribing circle.

Hexahedron. Solid, having six plane faces or surfaces. The regular hexahedron is the cube, all six faces being squares of equal size.

Hexameter (Gr. *hex*, six; *metron*, measure). Metrical line or verse containing six feet, of which the penultimate one must be a dactyl and the final one either a spondee or a trochee. It is the metre of the classical epics, but is not well adapted to the genius of the English language. Longfellow's *Evangeline* is the best known and most successful hexameter poem in English. Instances of accented hexameters occurring in English prose without intention are not uncommon, e.g. *How art thou fallen from heaven, O Lucifer, son of the Morning* (Isaiah xiv, 12). See Poetry.

Hexamine OR **UROTROPINE.** Compound formed by ammonia and formaldehyde. Chemically it is hexamethylenetetramine. Hexamine is employed as an internal disinfectant, its properties depending upon the slow liberation, in the urinary tract, of formaldehyde.

Hexapla, THE. Work compiled by Origen (*q.v.*). The term means "sixfold" (neut. pl. of Gr. *hexaplos*), and was suggested by the plan adopted by Origen to show the divergencies between the Septuagint, the later Greek versions, and the current Hebrew text of the O.T. The compilation is arranged in six

parallel columns. The first contains the Hebrew words; the second a transliteration of the Hebrew words in Greek characters; the third the Greek equivalents in the version of Aquila (fl. 128-129), a version intended to be much more literal than that of the Septuagint; the fourth the Greek equivalents in the version of Symmachus (fl. c. A.D. 180-192), a much freer version than that of Aquila; the fifth the Greek equivalents in the Septuagint (*q.v.*); the sixth the Greek equivalents in the version of Theodotion (fl. perhaps under Marcus Aurelius), a free revision of the Septuagint.

Hexateuch, THE (Gr. *hex*, six; *teuchos*, volume). The term *Pentateuch* is an old designation of the first five books of the Bible (Gr. *pente*, five), which were ascribed to Moses by Jewish, Mahomedan, and Christian tradition. These books are known collectively to the Jews as the *Torah* or the *Law* and are described by them sectionally as "the five-fifths of the law." The term *Hexateuch* has been invented by modern scholars in order to include in the same group a sixth book, the *Book of Joshua*, which is linked closely by its contents and style to the preceding five books and is based upon the same documentary sources.

It is contended that the *Pentateuch*, except in certain sections, does not claim to be the work of Moses. It is a book about Moses, just as the *Book of Joshua* is a book about Joshua. It is, in fact, together with the *Book of Joshua*, according to many modern scholars, a composite work framed and edited out of materials of varying date (c. 850-400 B.C.).

Doubts as to the Mosaic authorship of the *Pentateuch* had been expressed already by such writers as Hobbes (1651), Peyrierius (1654), Spinoza (1671), Le Clerc (1685), and by the French Oratorian, R. Simon (1678), who has been called "the father of Old Testament criticism." But criticism proper began with Jean Astruc, a French physician (d. 1766). Astruc held that there are two distinct accounts of creation in Genesis, (a) Gen. 1, 1-2, 4a, (b) Gen. 2, 4b to the end of chapter 3, and that in (a) the author speaks of God as Elohim, while in (b) he speaks of him as Jehovah.

This suggested the use in the composition of Genesis of at least two independent documents, the Elohist (E) and the Jehovistic (J). But Astruc had to assume the further use of ten other documents. His theory of composition, which was developed by Eichhorn (1779) and by Ilgen (1798), who thought he could discover two Elohist, has been called the Earlier Documentary Hypothesis.

Another stage was marked by the work of A. Geddes, who in 1800 suggested that the Pentateuch was composed of a number of smaller and larger fragments derived from an Elohist and a Jehovistic school. This theory, which was developed by Vater (1805), has been called the Fragmentary Hypothesis. Its defects, the Pentateuch in its present form being a unit, were pointed out by De Wette, and a new theory arose which is closely associated with the name of F. Bleek (1822). According to this, an historical work containing the main part of Genesis-Numbers and the Book of Joshua, and including Deut. xxiv, 1-8, all being the work of the Elohist, was edited and supplemented by a Jehovist writer. The whole work was then revised again in a Deuteronomic spirit by the author of Deuteronomy. This theory has been called the Supplementary Hypothesis.

The next stage of development is marked by a return to the documentary theory. It was the merit of Hupfield (1853) to succeed in demonstrating that in Genesis there are three independent documents which were combined by a redactor. Following the hint of Ilgen, he distinguished two writers who employ the word Elohim instead of Jehovah, one of them a priestly writer. This theory, which was developed by Graf (1866), Kuenen (1861), influenced by Bishop Colenso, and Wellhausen (1878), has been called the Later Documentary Hypothesis.

In its latest form, the documentary hypothesis assumes the use of four independent documents. A Jehovist work (c. 800 B.C.), derived from Judah and designated J by scholars, and an Elohist work (c. 750 B.C.), derived from Ephraim and designated E by scholars, circulated independently for a time. Later (some time before 650 B.C.) these two works were combined. The united work, which has been described as the "Oldest Book of Hebrew History," incorporated (from E) the earliest of the three chief codes of Hebrew law, now known as the Book of the Covenant. It knows nothing of the reform as

to "high-places," or as to the limitation of sacrifice to the temple at Jerusalem. In 620 B.C. a work largely, but not entirely, identical with our book of Deuteronomy, the Deuteronomic code, was discovered. Soon afterwards this work, with additions at the beginning and the end, was combined with the other two works. This third document, which seems to know nothing of the "priestly" law, is designated D by scholars. In each case, of course, the combination was the work of a redactor. Thus we get the formula: $(J + E) + D = JED$

Rje Rd = JED

There next arose a document containing an ancient body of laws (Lev. 17-26), which stands midway between Deuteronomy and the priestly legislation. This has been called the Law of Holiness. It was incorporated in a later priestly work which has been designated by scholars the Priestly code or P. This was promulgated by Ezra in 444 B.C., and some time afterwards was combined by a redactor with J E D. Thus we get the formula: $\text{Hexateuch} = (J + E) + D + P$

Rje Rd Rp

The various documents are distinguished, according to the critics, by differences in style and tone.

It is a mistake, however, to suppose that the considerations are simply linguistic and stylistic. It is held that the separation of the sources is dictated as much, if not more, by historical considerations. Apart from the fact that there are many duplicate narratives, the historical course of events as a whole postulates a gradual but inevitable development and evolution, first the prophet, then the priest, next the ritual. See Bible; Pentateuch.

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Hexham. Market town and urban district of Northumberland. It stands on the S. bank of the Tyne, 20 m. from Newcastle, and has a station on the N.E. Ry. The town has tanning and other industries and a trade in agricultural produce, while in the neighbourhood are coal mines. The chief building is the priory church, a magnificent Early English building, restored in the 19th century. It was not entirely completed by its builders, the Augustinian

canons, the nave being only finished in the 20th century.

There are some remains of the priory of the Augustinian canons, which was dissolved at the Reformation. Other buildings are the grammar school and two old buildings, the Moot Hall and the Manor Office. The urban council owns the water supply and markets. Race meetings are held.



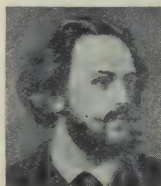
Hexham. The Moot Hall, the 15th century tower of the bailiffs of the archbishops of York

Hexham grew up around the church founded in the 7th century, and at one time it had its own bishop. After the Norman Conquest the town and district, called Hexhamshire, was a liberty ruled by the bishop and later by the archbishop of York. It was not united with the county of Northumberland until 1572. Market day, Tues. Pop. 8,400.

The battle of Hexham was fought May 15, 1464, between the Lancastrians and the Yorkists. It took place on the Linnels, 3 m. from the town. Beaten at Hedgeley Moor (q.v.), the Lancastrians collected a force and, led by Henry Beaufort, duke of Somerset, came up with the Yorkists under Lord Montagu. The latter were superior in numbers, whereupon the Lancastrians melted away, except about 500, who were soon killed or captured, Somerset and other leaders being executed.

Heyden, JAN VAN DER (1637-1712). Dutch painter and etcher. He was a native of Gorkum. Most of his pictures are of buildings or ruins in Dutch towns, but he travelled widely on the Continent and in England, painting wherever he went. Adriaan van de Velde occasionally introduced the figures into his works. Van der Heyden died at Amsterdam, Sept. 12, 1712.

Heyse, PAUL JOHANN LUDWIG (1830-1914). German novelist, poet, and dramatist. He was born at



Paul Heyse,
German writer

Berlin, March 15, 1830, and educated at Bonn University. After travelling in Italy, which he frequently re-visited, he was summoned by Maximilian of Bavaria, whose

attention he had attracted by his epic poems, to Munich, where he spent the rest of his life. His best work is seen in his short stories and longer novels on social and religious questions, the best of these being *L'Arrabbiata* (Eng. trans. 1867), *Children of the World* (Eng. trans. 1882), *In Paradise*, and *Merlin*.

His dramas, though they reach a high standard of literary excellence, were unsuited for the stage; Hans Lange, Kolberg, and Mary of Magdala, however, enjoyed a certain amount of success. His work shows the influence of his intimate acquaintance with Italy and its people. Heyse obtained the Nobel prize for Literature. See his autobiography, *Youthful Reminiscences and Confessions*, 1901-12.

Heysham. Seaport, watering-place, and urban district of Lancashire. It stands on the S. side of

throp House was long the residence of Albert Brassey (1844-1918), master of the pack for over forty years from 1873. In the vicinity are the Rollright Stones, forming an ancient stone circle. Pop. 247.

Heywood. Mun. bor. and parish of Lancashire. It is 9 m. N. by E. of Manchester on the L. & Y.R. It has extensive cotton and woollen factories, other industries including the manufacture of machinery and chemicals; there are coal mines in the neighbourhood. The borough possesses electric light and gas undertakings, tramways, markets, and baths. There are three recreation grounds, a free library, art gallery, and museum, the gift of Thomas Kay of Stockport. Queen's Park was presented by Queen Victoria. With Radcliffe it gives its name to a division returning one member to Parliament. Market day, Fri. Pop. 26,700.

Heywood, JOHN (c. 1497-1580). English epigrammatist and writer of interludes. A Roman Catholic and friend of Sir T. More, he is believed to have been at Oxford, and was a favourite of Henry VIII and Queen Mary. His Proverbs on Marriage proved a rich quarry for the Elizabethan dramatists. The Four PP is his best interlude. His complete works were edited by J. S. Farmer, 1905-6.

Heywood, THOMAS (d. c. 1650). English actor and dramatist. He is supposed to have been born

in Lincolnshire and educated at Peterhouse, Cambridge. In 1598 he became an actor in Henslowe's company and, after the accession of James I, a member of the queen's company of players. About 1596 he wrote his first play, *The Four Prentices of London* (printed 1615), and in 1633, in a prefatory address to *The Traveller*,

he claimed to have had "either an entire hand, or at the least a main finger" in 220 plays. Of these pieces only 35 are known to exist.

He attempted every kind of drama, and also wrote pageants, four of which are still extant, poems, translations, and various prose works, including *An Apology for the Lord Mayor*, 1631-39; *Several Actors*, 1612; *Nine Books of Women*, 1624; and *A Life of Queen Elizabeth*, 1631. Of his plays, *Edward IV*, 1600, and *A Woman Killed With Kindness*, 1603, are perhaps the best ex-

amples; the first of his work in what was known as the "chronicle history," and the second of the domestic drama of sentiment. A collection of his extant plays was published, 6 vols., 1874, and a selection from them, ed. J. A. Symonds, in the *Mermaid Series*, 1903. See *Select Plays*, ed. J. A. Symonds and A. W. Verity, 1888.

Hezekiah. King of Judah (2 Kings 16, 18-20; 2 Chron. 29-30). He succeeded his father, Ahaz, at the age of 25, and was a notable reformer, who abolished the centres of idolatrous worship and destroyed the brazen serpent of Moses, which at this time seems to have been regarded as a kind of idol. He also cleansed the Temple and restored the worship of Jehovah. For a time he continued the tributary alliance with Assyria, but later repudiated it and had to face two invasions under Sennacherib. The first of these was partly successful, but in the second Hezekiah completely routed his foes. He was a man of considerable literary and poetic gifts, and is regarded by the Jews as one of their most famous monarchs.

H.H. Abbrev. for His (or Her) Highness: His Holiness (the Pope).

Hiawatha. One of the many names of a traditional personage of miraculous birth. He is believed by various tribes of the N. American Indians to have been sent to teach them the arts of peace.

Hiawatha, THE SONG OF. Epic poem by H. W. Longfellow, 1855, embodying the legends and traditions of the N. American Indians. Taking as model for his verse form the unrhymed Finnish epic of *The Kalevala*, the poet gave the story of Hiawatha from his wondrous birth to his final passing "To the land of the Hereafter," and embodied in it much of Indian lore. Written in unrhymed trochaic tetrameters, the novelty of its form provoked much criticism at first, but it is now not unjustly regarded as Longfellow's greatest achievement.

Hibbert Trust, THE. Trust founded under the will of Robert Hibbert (1770-1849). The income arising from the funds is applied in such manner as the trustees deem conducive to the spread of Christianity in its simplest form, and to the exercise of private judgement in religion. The Hibbert lectures are delivered under the auspices of the Trust. The Hibbert Journal was founded in 1902 with its support. Scholarships for post-graduate study are awarded to suitable students for the ministry. The office is in Gordon Square, London, W.C. See *Memoir of R. Hibbert*, 1874.



Heysham, Lancashire. The principal dock from the west
Photochrom

Morecambe Bay, 5 m. from Lancaster, and has a station on the Mid. Rly. The company built here a harbour, finished in 1904 and covering 300 acres, and has made Heysham a terminus for a regular passenger and goods service with Belfast and other Irish ports, also to Douglas, Isle of Man. The small church, dedicated to S. Peter, is mainly Norman. Pop. 3,300.

Heythrop. Village of Oxfordshire, England. It is 3 m. N.E. of Chipping Norton, and gives its name to a pack of foxhounds that hunt this part of the county. Hey-

Hibbing. Mining town of Minnesota, U.S.A., in St. Louis co. It stands on Duluth river, 82 m. N.W. of Duluth, and is served by the Great Northern and other rlys. Lumbering is engaged in, but the town is chiefly noted for the extensive iron mines, including the Mesabi iron ore range in the neighbourhood, which yield an enormous output, mostly of red hematite—nearly 60 p.c. of the country's production. Pop. 17,550.

Hibernation (Lat. *hibernare*, to pass the winter). Dormant or torpid condition in which many animals and plants pass through the winter. In the case of animals it may be complete or intermittent. It is not so much caused by cold as generally supposed, but by the lack of food which cold produces. Thus, the absence of foliage causes large numbers of insects and molluscs to pass the winter in a torpid state. This causes the insectivorous birds to migrate in autumn to warmer countries where food is plentiful.

This expedient is not available for the mammals and reptiles, so after laying up a store of fat in their tissues, they retire into winter quarters and fall asleep. The British bats, which are entirely insectivorous, retire to caves, hollow trees, and the roofs of dwellings; but some of them are very sensitive to a rising of outdoor temperature, and come out for an occasional winter flight and feast upon the insects that have also been awakened. Some species, like the squirrel and dormouse, provide for such intervals by laying up secret caches of nuts and grain to which they can resort, afterwards resuming their sleep. During this period the body temperature falls, the pulse is reduced, respiration is feeble, and other functions are suspended entirely. Frogs bury themselves in the mud at the bottom of ponds; toads, newts, and snakes retire to holes in the ground.

Among insects hibernation is almost general where the food is vegetation, and it may be passed in any stage of the life cycle—either as egg, larva, pupa, or perfect insect. Familiar butterflies like the brimstone and the small tortoiseshell frequently occasion newspaper paragraphs by appearing on the wing during some genial sunny interval in midwinter, but these are only hibernating females awakened by a rise in temperature.

Although the botanical textbooks are silent upon the subject of hibernation, the phenomenon is quite common among plants, many of the bulbs and underground rhizomes representing the hibernating condition, while others

illustrate the opposite condition— aestivation—when the plant is seeking to avoid the dangers of drought. The behaviour of frogbit (*q.v.*) and other floating plants which withdraw all their substance into winter-buds and sink to the bottom mud is distinctly a case of hibernation.

Hibernia or **IVERNIA**. Name given to Ireland by Latin writers. Aristotle spoke of it as *Ierne*, and Latin authors evolved the form *Hibernia*. See *Ireland*.

Hibernians, ANCIENT ORDER OF. Society composed of Catholic Irishmen, and organized on nationalist and benefit lines. It is said to have been founded by Rory O'More in the 17th century under the name of the Defenders. After the Catholic Emancipation Act became law in 1829, the society was remodelled and its operations were extended to Great Britain, as well as to N. America, where, particularly in the U.S.A., the A.O.H. became a body of political importance, Australia and elsewhere. Members must be of Irish birth and profess the Roman Catholic religion. The Hibernians have given active support to the Gaelic and other nationalist movements in and on behalf of Ireland.

Hiccough. Convulsive act produced by spasmodic contraction and descent of the diaphragm, the large horizontal muscle which separates the cavity of the chest from the abdomen. It is most frequently due to over-distension of the stomach with food or wind, and is sometimes a symptom in more serious diseases such as peritonitis, cancer of the stomach, and typhoid fever. Hiccough may generally be stopped by holding the breath for a minute. Properly the word should be spelt, as it is always pronounced, hiccup, the form hiccough being due to a supposed connexion with cough.

Hichens, ROBERT SMYTHE (b. 1864). British novelist. Born at Speldhurst, Kent, Nov. 14, 1864, and educated at Clifton, he first studied music but abandoned it for literature. His satirical story *The Green Carnation*, 1894,



Robert Hichens
Russell

published anonymously, piqued public curiosity. He developed this vein of social satire with great success in *The Londoners*, 1898, and *The*

Prophet of Berkeley Square, 1901, but the finest and most popular of all his books is the eastern story, *The Garden of Allah*, 1905, a subtly presented study of the struggle between religion and passion. Other of his novels are *Flames*, 1897; *The Call of the Blood*, 1906; *Bella Donna*, 1909; and *The Way of Ambition*, 1913. His work for the stage includes *The Real Woman*, and plays based on his novels *Bella Donna* and *The Garden of Allah*.

Hickory (*Carya*). Genus of trees of the natural order Juglandaceae, natives of N. America.



Hickory. Leaves and nuts of the North American tree

The leaves are large, divided into oblong leaflets arranged feather-fashion, like those of the nearly related walnut trees. The flowers, which are without petals, are male or female; the males in hanging catkins, the females in a short spike at the end of the new shoots. The husk of the large fruit splits into four segments, revealing the thin-shelled nut. The timber is hard and tough. *C. illinoensis* is the pecan, whose delicious, olive-shaped nuts are a favourite fruit. *C. ovata*, the shell-bark or shag-bark, produces the principal hickory-nut of the markets. *C. laciniata* is the big shell-bark or king-nut; *C. alba* the mocker-nut; *C. aquatica* the bitter pecan, and *C. glabra* the pignut or broom hickory.

The shell-bark was introduced into Great Britain in 1629. Hickory trees thrive best if grown as specimen trees in any ordinary soil on lawns or the borders of woodlands, and may be planted in either autumn or spring. When pruning takes place in Nov. the thinnings of the hickory are particularly valuable, if preserved and dried, for use as walking-sticks. The hickory is propagated by means of nuts sown in late autumn.

Hicks, EDWARD SEYMOUR (b. 1871). British actor. Born at St. Helier, Jersey, Jan. 30, 1871, and originally intended for the army, he first appeared on the stage at the Grand Theatre, Islington. He

was engaged by the Kendalls and toured with them in England and America, re-appearing in London in 1891 at The Court. At Toole's Theatre in Feb., 1892, he appeared as Andrew McPhail in Barrie's comedy Walker, London. From 1893-98 he was principal light comedian at The Gaiety. He built the Aldwych Theatre, which he opened Dec., 1905, with Blue Bell in Fairylund, and in Dec., 1906, opened The Hicks (later The Globe) Theatre, appearing in the musical play, The Beauty of Bath. In 1902 he married Ellaline Terriss (b. 1872). He published his reminiscences in 1910, *If I were Your Father*, in 1919, and *Difficulties*, in 1922.



E. Seymour Hicks.
British actor.
Elliott & Fry

Hicks, WILLIAM (1830-83). British soldier, commonly known as Hicks Pasha. He first saw service in India, and acted as brigadier-major in the Abyssinian campaign of 1867-68. Leaving the British army in 1880, Hicks was appointed in 1883 to the command of the Egyptian expedition against the Mahdi. The forces of the latter were signally defeated near Jebel 'Ayn on April 29, and Hicks pushed forward up the White Nile to Duem, whence he branched off across the desert to El 'Obeyd. Betrayed by their guide, the Egyptian force fell into an ambush at Kashgil and, after defending themselves bravely for three days till their ammunition gave out, were virtually annihilated. Hicks himself fell, Nov. 5, 1883.



William Hicks,
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Hidalgo (Span. *hijo de algo*, son of something). Spanish title. It was formerly used of a member of the lower nobility, but now seldom denotes more than gentle birth. The Portuguese form is *fidalgo*.

Hidalgo. Central inland state of Mexico. It covers an area of 8,637 sq. m. and forms part of the great central plateau. It rises in places to 10,500 ft., but the S. and S.W. portions contain many fertile valleys. The chief agricultural products are cereals, coffee, sugarcane, tobacco, and cotton, and the agave is also cultivated for the production of pulque, the national drink. Mining is an important

industry, silver and iron being the chief ores. Communication is provided by the Mexico Central, and Vera Cruz and Mexico rlys. Pachuca is the capital. Pop. 655,190.

Hiddenite. Green transparent variety of the mineral spodumene. It was first discovered by W. E. Hidden in America. Its colour is due to the presence of chromium, and the crystals cut and polished have been used as substitutes for emeralds, which it resembles.

Hide. Anglo-Saxon measure of land. There has been much discussion about its size, the estimates ranging from 30 to 120 acres. It began as the amount of land necessary to support a single household, which was probably the labour of eight oxen for 120 days in the year. After a time it was regarded as consisting of 120 acres, not necessarily acres of 4,840 yards, but smaller ones. In each hide were four virgates.

At the time of the Conquest the hide was primarily a unit of assessment, not a measure, and this is why it figures so regularly in

Hide. Term used for the skin of an animal. Any skin is a hide, but, commercially, hide is used for the undressed skins of oxen, horses, and other large animals, those of goats, calves, and sheep being known usually as skins. These are prepared, and in the form of leather are used for many purposes. See Leather; Tanning.

Hieraconpolis. Greek name of the ancient city Nekhen at Kom el-Ahmar, Upper Egypt. Situated near the left bank of the Nile, 44 m. above Luxor, it was the residence of the predynastic kings of the S., and sacred to the hawk-headed god Horus. Quibell's excavations, 1897-98, yielded superb examples of early art, including a mace-head and palette of Narmer, a red-gold hawk's head, and a copper statue of Pepy I.

Hierapolis. Ancient city of Phrygia, Asia Minor. Situated near the river Maeander, above the Lycus valley, its ruins exist at the present day. It was famed for the worship of Leto or Latona. It is not to be confounded with Hierapolis (mod. Mambei) in Syria, about 50



Hierapolis. Part of the ruins of the ancient Phrygian city, near the river Maeander

Domesday, where the holdings are given in hides. Taxes were paid on the number of hides, which had little relation to the size of the holding. The tax, generally one of 2s. per hide, was known as hidage, but afterwards as carucage.

The hide was also used in Anglo-Saxon times to express a man's social standing or the value of his oath, while the unit of five hides occupied an important place in the military system of early England. In the Danish parts of England the carucate took the place of the hide. It should be said that the evidence is very conflicting, and that there were doubtless small hides of 30 acres. See Domesday Book; consult also Domesday Book and Beyond, F. W. Maitland, 1897; Feudal England, J. H. Round, 1909.

m. N.E. of Aleppo, called Bambyce by the Greeks and noted for its temple to Astarté.

Hierarchy (Gr. *hieros*, sacred; *archein*, to govern). Literally, administration of sacred things. The term was first used by the sixth century writer known as Dionysius the Areopagite, in his treatise On the Heavenly and Ecclesiastical Hierarchies. By the celestial hierarchy is meant the angels, archangels, and all the company of heaven (see Hymn of Praise in the Communion Service). The Jewish hierarchy included the high priest, priest, and Levite. In the Christian Church the term means the presiding officers. It is used also of any body of officials organized in ranks and orders, to define priestly government, and to classification in biology and logic.

Hieratic (Gr. *hieratikos*, sacred, sacerdotal). Cursive script employed by the priestly scribes in ancient Egypt. It was a simplified and conventionalised form of hieroglyphic, normally written from right to left in black, often with rubrical characters in red. Traceable from the 1st dynasty to the 4th century A.D., notable examples are the XIIth dynasty Prisse and the XIXth dynasty Harris papyri. Theban tombs of the New Empire have yielded wood coffins, limestone slabs, and stuccoed boards bearing this script. Long regarded as the parent of the Phoenician alphabet, it is now considered to have played a minor part, if any, in that invention.

Hiero I (Gr. *Hieron*). Tyrant of Syracuse, 478-467 B.C. His great exploit was a decisive naval victory over the Etruscans near Cumae in 474. An Etruscan helmet, with its dedicatory inscription, consecrated to Apollo, is preserved in the British Museum. Hiero was a generous patron of art and literature, among the notable men who resided at

his court under his patronage being Aeschylus, Pindar, Bacchylides, and Simonides.

Hiero II. King of Syracuse, 270-216 B.C. He first distinguished himself in the wars against Pyrrhus (q.v.), and being made a general by the Syracusans eventually received the kingship. In the war between Rome and Carthage, Hiero at first sided with Carthage, the Romans having entered into an alliance with the Mamertines, who had seized Messina. After the defeat of the Carthaginians and Syracusans in 263, Hiero made peace, and remained the friend and ally of the Romans. He did much to improve the finances of the country, and certain laws relating to agriculture and the corn supplies called *leges Hieronicae* are mentioned by Cicero as still existing.



Hiero II
From a coin

The Greek text shows that the inscription is an edict of the priests of Pthah in Memphis in March A.C. 196, who decreed that special honours should be paid to Ptolemy V. Epiphanes, as a mark of their appreciation of the great benefits which he had conferred upon Egypt. There was therefore no doubt that the two cartouches contained the name of Ptolemy, and the Greek text made it clear that the last eight characters in the second cartouche represented titles of the king. The obelisk from Philae mentions two royal names thus:—

1. ,

2. ,

i.e., Ptolemy and Cleopatra.

A glance shows that with the exception of one character, the last, the second cartouche containing Ptolemy's name on the Rosetta Stone is identical with that containing Ptolemy's name on the obelisk. Young then assumed that the names began at the rounded end of the cartouche, and he called the first sign \square P; as this letter occurs in the name of Cleopatra on the obelisk, and it comes in the middle of the name, he was certain of the value of \square . The second sign \bigcirc he guessed was T, and also that \bigcirc , which occurs in the cartouche of Cleopatra as well as in Ptolemy, had the value of U or O. The letter L, which also occurs in both cartouches, was represented by , and the following letter must be M.

The last letter must be S, because the Greek form of the name ends in S. The two remaining characters he believed represented some vowel, or combinations of vowels. By examining the variant forms of the names of Ptolemy and Cleopatra in hieroglyphs he deduced the values of many other signs, e.g., = U, = R, = T, and so on, and the names of Alexander, Philip, Arsinoë, Berenice, etc., supplied many others. The decipherment of the Egyptian hieroglyphs was carried to a triumphant conclusion by J. F. Champollion (1790-1832), who published a Hieroglyphic Grammar and Dictionary and a very large number of hieroglyphic inscriptions. On his work the whole of the modern work on Egyptian is based.

HIEROGLYPHS: ORIGIN AND MEANING

Sir E. A. Wallis Budge, of the British Museum

From this article the reader may usefully turn to the one on Egypt. See also Assyria; Babylonia; Cuneiform; Rosetta Stone; while Alphabet and Writing may also be consulted

Name commonly applied to the picture characters which the Egyptians used in writing. Tradition in Egypt asserted that their invention was due to Thoth, the god of all learning, and they were employed in all ceremonial and religious inscriptions and texts from the early part of the Archaic Period (about B.C. 4000) to the second or third century A.D. In Egyptian texts they are called , "the words of the god," and so the Egyptian picture writing was described by classical writers as "Hieroglyphic," i.e., "sacred writing."

Three forms of Egyptian writing are distinguished: 1. hieroglyphic; 2. hieratic; 3. demotic. In the first form the characters are all pictures, generally easily recognizable; in the second only the most salient features of the pictures are preserved; in the third the characters are modified and abbreviated and finally become, in many instances, mere conventional representations of the hieroglyphs. The knowledge of hieroglyphic writing was lost, except among a few learned priests and scribes, early in the Roman Period, and all attempts to decipher it were unsuccessful until the beginning of the nineteenth century, when

Thomas Young (1773-1829) deduced the correct values of several of the characters of the Egyptian alphabet.

Thanks to Zoega (1755-1809), it was known that a king's name was always written within an oval

, but it was uncertain at
























which end of the oval the name began. There were two monuments that cleared up this difficulty, viz., the Rosetta Stone in the British Museum, and a stone obelisk from Philae, which now stands in the park at Kingston Lacy, Dorset. Each of these monuments contains a Greek as well as an Egyptian version of the inscription, and as it was customary for kings to publish their edicts and documents of public importance in two or more languages, it was held to be certain that the subject matter of the Egyptian and Greek texts on the Rosetta Stone was the same.

Now, on the Rosetta Stone the royal name Ptolemy occurs in

these forms: 1. ,















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


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
















 A, and often used like the Heb. א.  Ā, a short a, e or i sound.  'Ā, like Heb. א.  U or W, like Heb. ו.  B, Heb. ב.  P, Heb. פ.  F, like Arab. ف.  M, Heb. מ.  N, Heb. נ.  R or L, Heb. ר and ל.  H, Heb. ה.  H, Arab. ح.  KH, Heb. כ.  S, Heb. ש (?).  SH, Heb. ש.  Q, Heb. ק.  K, Heb. כ.  G, Heb. ג and ק.  T, Heb. ת.  T (?).  TH (?).  T or DH, Heb. ט.  TCH. Hieroglyphs are

written both in columns and horizontal lines; in the former case they are read from right to left or left to right, according as they face.

Every hieroglyph can be used to express an idea, in which case it is called an "ideograph," or a sound, in which case it is called a "phonetic"; phonetics may be either alphabetic or syllabic. Thus

 as an ideograph is a finger,  a heart, and  a block of stone,  a mouth, and  the wavy surface of water; but  and  are used as simple phonetic characters in the word  "name." Ideographic signs may be interpreted either literally, e.g.,  field,  wall,  cat, or symbolically, e.g.,  axe, which is symbolic of God,  a musical instrument, which is symbolic of "joy," "gladness,"  a bier with a mummy on it, which is symbolic of "death."

When a word is written with phonetic characters, a character is usually added to indicate the meaning, and this is called a "determinative." Thus  means "to stand" has the determinative of a pair of legs added thus , and when the word means "boat" the determinative of a boat is added  ;

similarly  to be stable, and  pain, are determined by , which represents an abstract idea, and by , a bird symbolic of evil or anything unpleasant. Some words have several determinatives, e.g.,  qebh, "cool water," is written  , i.e., the signs for a libation vase, and water, and pool are added. The plural of a word is indicated by three strokes placed after it thus,  man,  men, or by  , or  . The numbers 1-9 are represented by strokes, e.g.,  = 1; the sign  = 10,  = 100,  = 1,000,  = 10,000,  = 100,000,  = 1,000,000, and  = 10,000,000.

See The Rosetta Stone, with large plate, published by the British Museum, and Guide to the Egyptian Collections in the British Museum.

Hieronymites. Order of hermits, an offshoot of the Franciscans, who took their name from S. Jerome (Gr. Hieronymos). They were founded in the 14th century by Thomas of Siena, and were known as Gregorians, Brethren of the Common Lot, and Brethren of Goodwill. They had houses in Spain, Portugal, Italy, and Bavaria. See Asceticism; Hermit.

Hieronimus of Cardia. Greek soldier and historian. He served under Alexander the Great and after Alexander's death under Eumenes of Cardia, in Asia Minor. He transferred his allegiance to Antigonos when the latter defeated and killed Eumenes in 316 B.C., and to his successors, Demetrius and Antigonos Gonatas, in whose reign he died at the age of 104. Hieronimus wrote a history of the period between the death of Alexander and that of Pyrrhus. It has not been preserved, but was utilised by Plutarch in his life of Pyrrhus.

Hierophant (Gr. *hieros*, divine; *phainein*, to expound). Official name of the initiating priest at the Eleusinia (*q.v.*). His duty was to exhibit and interpret the sacred symbols employed in the mysteries. In Rome the title was sometimes applied to the Pontifex Maximus.

Hierro or **FERRO** (Iron Island). South-westernmost and smallest of the Canary Islands in the Atlantic, belonging to Spain. Of volcanic origin, it is well wooded and mountainous, the highest point

being 4,640 ft. Little of the land is cultivated, as springs and streams are lacking, but on the pasture land a small breed of sheep is reared for export. Wine, fruit, honey, and brandy are produced. Anciently supposed to be the most westerly land, its meridian is said to have been known to Ptolemy, and it has been used by Continental geographers from the time of Louis XIII for measuring longitudes. The conventional meridian used by cartographers is 17° 39' 45" W. of Greenwich, or 20° W. of Paris; the true meridian is, however, 18° 7' 5" W. of Greenwich. The capital is Valverde. Pop. about 7,000.

Higdon, RANULF (d. c. 1363). English chronicler. A Benedictine monk of S. Werburg's, Chester, where he spent 64 years of his life, his famous work is his Polychronicon, a history of the world from its beginning down to the death of Edward III. An English version by John Trevisa was printed by Caxton in 1482.

Higgins, HENRY BOURNES (b. 1851). Australian lawyer. The son of Rev. John Higgins, he was born at Newtownards, in Ireland. His education was begun in Dublin, but was completed at the university of Melbourne, whither he went in 1870. After a distinguished career there, he became a barrister in 1876. In 1894 he was chosen a member of the legislative assembly of Victoria, which state he represented on the federal convention. He entered the federal parliament in 1901 as M.P. for Melbourne, N., and in 1904 was made attorney-general of the commonwealth. In 1906 Higgins was appointed a judge and president of the commonwealth court of conciliation and arbitration. His publications include a work on the Commonwealth Act.

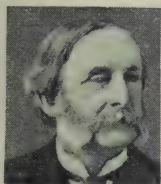
Higginson, SIR GEORGE WENTWORTH ALEXANDER (b. 1826). British soldier. The son of George P.



Sir G. Higginson,
British soldier.
Russell

Higginson, a general in the army, he was born June 21, 1826. Educated at Eton, he entered the Grenadier Guards in 1845, and served with the Guards during the Crimean War. From 1879-84 he commanded the brigade of Guards and the home district, and he retired with the rank of general in 1893. In 1889 he was knighted. He wrote *Seventy-one Years of a Guardsman's Life*, 1916. See Butler, Lady.

Higginson, THOMAS WENTWORTH (1823-1911). American soldier and author. Born at Cambridge, Mass.,



T. Wentworth Higginson,
American author

Dec. 22, 1823, and educated at Harvard, he was ordained in 1847, and became Unitarian pastor at Newburyport and Worcester, 1850-58. During the civil war he was colonel of the 1st S.C. Volunteers, the first regiment of freed slaves, and was wounded at Wiltown Bluff, 1863. He took an active interest in anti-slavery, educational, and women's suffrage movements. A man of striking personality, he wrote with charm and distinction, being the author of *Lives of Margaret Fuller*, *Marchioness Ossoli*, 1884; *Longfellow*, 1903; and *Whittier*, 1903; two histories of the U.S.A., one for the young, 1875, and 1885; *Army Life in a Black Regiment*, 1870; *Tales of the Enchanted Islands of the Atlantic*, 1898; *Old Cambridge*, 1899; *Contemporaries*, 1899; *Part of a Man's Life*, 1905. *See* *Life*, M. P. Higginson, 1914; *Works*, 7 vols., 1900.

Higgs, WILLIAM GUY (b. 1862). Australian politician. Born in New South Wales, Jan. 18, 1862, after learning printing he became a journalist. Entering politics, he obtained a seat in the Brisbane municipal council, 1899-1900. Having sat for the same period in the Queensland parliament, in 1901 he was elected to the first Commonwealth parliament; later he represented Queensland in the senate and was chairman of committee to that body 1904-6. He was treasurer of the Commonwealth, 1915-16.

Higham Ferrers. Mun. borough and market town of Northamptonshire. It stands on the Nene, 5 m. from Wellingborough, and 63 from London, and has a station on the Mid. Rly. The making of boots and shoes is the chief industry. The church of S. Mary is a fine old building, mainly of the Decorated period. The buildings erected by Archbishop Chichele about 1420 include the school house in the Perpendicular style, and the Bede House. The archbishop founded a college here. Higham was on the lands of the Ferrers family in the Middle Ages. It had a castle, and became a corporate town in the 13th century. It still retains its mayor and corporation. Pop. 2,700.

Highbury. District of N. London. It is in the bor. of Islington, with a station on the N.L.R. Near

the station are Highbury Fields, 27½ acres, acquired for the public in 1886 and 1891. Here stood the manor house, once the property of the priors of S. John; it was destroyed in the Wat Tyler rising of 1381. On the site of the barn or dairy of the manor house was built a cake and ale-house, which, after becoming a tavern with tea gardens, and a hotel with music-hall and dancing saloon, disappeared in 1871. In Aubert Park is the London College of Divinity.

Near the college is the ground of Woolwich Arsenal F.C., to the E. of which is Highbury Vale. The Nonconformist club known as the Highbury Society held its meetings at Highbury Barn, 1740-1833. Abraham Newland, chief cashier of the Bank of England, lived at No. 38, and Joseph Chamberlain, when a boy, at No. 25, Highbury Place. The manor, mentioned in



Highbury Barn as it appeared in 1792

By courtesy of Cassell & Co.

Domesday, belonged in turn to Thomas, Lord Cromwell, Queen Mary, Henry, son of James I, and Charles I, who in 1629 sold it to Sir Allan Apsley.

High Commission, COURT OF. English ecclesiastical court. It was set up in 1559 to enforce greater uniformity in the services of the Church of England. Whitgift, archbishop of Canterbury, persuaded Elizabeth to delegate her powers of jurisdiction over the church to a commission of 44 persons of whom 12 were bishops. This was done on the strength of an act of 1558 by which the ancient jurisdiction of the state, ecclesiastical and spiritual, was restored to the crown. The method of action was to request a suspected person to take an oath denying some particular proposition. The court was abolished by an act of July 5, 1641.

High Commissioner. Title given to certain representatives of their countries in positions of importance. Canada, Australia, South Africa, Newfoundland, New Zealand, and India are represented in London by High Commissioners

Viscount Milner was High Commissioner in S. Africa, 1897-1905; the king's representative in Egypt has the same title.

High Court of Justice. English court of law, a branch of the supreme court of judicature, as established in 1873. It is divided into three divisions: chancery, king's bench, and probate, divorce and admiralty; in addition one of its judges is detailed to preside over a court of bankruptcy and another to deal with the winding-up of companies, both as part of the king's bench division.

By the Judicature Act of 1873 every division of the high court has power to try anything that any other division may: thus, a chancery judge may try a divorce or probate suit or an action for libel. In fact, actions of a mixed common law and equity character are tried daily. But in order to secure the

service of expert judges certain matters are ordered to be started in specific divisions.

Thus common law actions for damages, for the recovery of debts, etc., should be commenced in the king's bench, actions for administration of trusts, specific performance of contracts, and for injunctions to restrain injuries

to rights of property, e.g. copyright, rights of light, etc., should be brought in the chancery division; while in the probate, divorce and admiralty division should be commenced the suits which the title of the division indicates. Each division of the court has its quota of judges, all appointed by the crown on the advice of the lord chancellor, all knighted on appointment, and entitled to a salary of £5,000 a year and a pension on retirement.

The lord chancellor is the president of the chancery division; the lord chief justice of the king's bench division, while the probate, divorce and admiralty division has a president. The sittings of the high court, except those of the judges of the king's bench division when on circuit, are held at the royal courts of justice, Strand, W.C. *See* Chancery; Judge; King's Bench.

Higher Criticism. Term applied to the scientific criticism of the books of the Bible. *See* Criticism; Biblical.

Highflyer. British second-class cruiser, nameship of a class of three. Her length is 350 ft., beam 54 ft.;



H.M.S. Highflyer, British second class cruiser

Cribb, Southsea

displacement 5,600 tons; the engines have 10,000 h.p., giving a speed of 20 knots, the armament being eleven 6-inch, and seventeen smaller, with two submerged torpedo tubes. When Belleville boilers were first introduced into the navy, the Highflyer, fitted with these, ran competitive trials against ships that had the ordinary locomotive boilers. The data thus obtained led to the general introduction of water-tube boilers. The *Hermes*, a sister ship, and one of the vessels against which the Highflyer was pitted, was torpedoed Oct. 31, 1914. The *Hyacinth* is the other cruiser of the type. The Highflyer sank the German cruiser *Kaiser Wilhelm der Grosse* off the Ouro river on the W. African coast, Aug. 27, 1914.

Highgate. Residential suburb of N. London. The S. part of the district is in the met. bor. of St. Pancras, and part in that of Islington; the N. part, situated on a summit, 426 ft., E. of its sister height of Hampstead (*q.v.*), is just outside the London co. boundary and in the co. of Middlesex. There are stations on the G.N. and Hampstead (Tube) Rlys., and frequent tram & bus services.

At the foot of Highgate Hill is Whittington's Stone, on the traditional site of the stone on which Dick Whittington is said to have sat as he heard Bow Bells chiming the refrain, Turn again, Whittington, thrice lord mayor of London. At the foot of the Archway Road are the almshouses, known as Whittington College, removed from the city in 1822. Between the two thoroughfares named is the Holborn Union Infirmary. On the W. side of Highgate Hill are the Islington Infirmary, S. Joseph's Retreat, 1875-76, enlarged 1862 and 1889, mother house of the Passionist Fathers in England, and Waterlow Park, 29 acres, containing Lauderdale House, presented to the public by Sir Sydney Waterlow in

1889, with Highgate Cemetery to the W.

Open spaces, to the N., are Highgate Wood and Queen's Wood, 70 acres, public since 1886. The Village and its High Street retain something of their rural charm. Here are the Gothic parish church of S. Michael, 1832, the spire of which is a conspicuous landmark; Cromwell House, said

to have been built by the Protector for General Ireton and now a convalescent home for children; and the Grammar School, 1865-68, founded by Sir Roger Cholmley, 1576-78, the chapel of which, covering the old burial ground of Highgate Chapel, has a crypt containing the grave of S. T. Coleridge.

On West Hill is Holly Lodge, once a residence of the duchess of St. Albans and later the home of the Baroness Burdett-Coutts. Cole-

Dickens, J. S. Copley, George Eliot, F. D. Maurice, C. G. Rossetti, and Tom Sayers.

Highgate's history goes back to the 14th century. It was once in the old forest of Middlesex, a hunting ground of Henry VIII. The bishops of London had a hunting park here, and the name is usually derived from a toll-gate erected at the top of the hill when the bishop in the 14th century allowed a road to be made through his park. Another and voluntary toll used to be levied on passing travellers, who were invited at the Toll Gate Inn and other hostelries to take the Highgate Oath, in return for which, and expenditure on drink, they were declared free of the local liberties. In the Archway Road, opened in 1813, is the archway, built originally of stone to connect Highgate with Crouch End, and replaced by the existing steel structure in 1900. Pop. 13,400. See History of Highgate, F. Prickett, 1842.

Highland. Term used for a tract of country standing at a considerable height above sea level. It has no reference to the structural character of the land, whether produced by folding or erosion, whether mountain chains or plateaux.

In N. and S. America there are great highland systems to the W. and lower highlands to the E. Almost the whole of Africa is high-



ridge lived in The Grove. Other notable residents include Francis Bacon, who died in the now demolished Arundel House; several earls of Arundel, Lauderdale, Nell Gwynn, Ireton, Andrew Marvell, Leigh Hunt, the Howitts, Arabella Stuart, Henry Sacheverell, Sir

Richard Baker, author of *The Chronicles of England*; Charles Mathews, Selina, countess of Huntingdon, and Bishop Atterbury. S. Michael's Church was consecrated in 1839. In Highgate Cemetery are buried Michael Faraday, Lord Lyndhurst, the parents of Charles



Highgate. The Archway, Gate, and Tavern as they were in 1825. Top left, the modern archway which replaced the old structure in 1900

land. In Europe the highlands are found in the N.W., the centre, and the S., while in Asia they cover the greater part of the S. and S.E.

In general, highland areas support fewer people than lowlands, but there are important exceptions, *e.g.* the open, grassy plateaux

of S. Africa and of the Sudan, which are located in low latitudes, so that elevation in their case, by reducing the temperature, actually promotes settlement. Highlands frequently act as barriers to communication and thus hinder intercourse between peoples living on different sides of the barrier, *e.g.* the Pyrenees, Caucasus, Alps, and Himalayas.

Highland areas are frequently inhabited by races driven there by stronger invaders who have taken possession of adjacent plains. In their highland homes they preserve their own language, manners, etc. Further, highland regions, owing to their relative poverty, are



Highland Cattle. Carriek Sir Fergus, a champion bull. Top right, cow

Charles Reid

frequently unable to support all their inhabitants. Thus, their greatest contribution to the world is often their export of people.

Highland Cattle. Breed of cattle found mainly in Argyllshire and the Western islands of Scotland. Whether it be the indigenous wild breed of the district or not, it is undoubtedly of great antiquity, and not greatly altered from the old Celtic shorthorn. It is the hardest of all British breeds, and is left largely to roam the mountains in a half-wild state and to pick up its own living. It is practically free from disease, and its beef is of high value. Its long, shaggy coat varies in colour from a creamy yellow to reddish brown and black, and it is often kept in parks for ornamental purposes. See Cattle, colour plate.

Highland Light Infantry. Regiment of the British army. Formerly the 71st and 74th Foot, it was first raised in 1777 by Lord Macleod, and in 1780 proceeded to India. For bravery at Assaye in 1803 it was presented with a third colour. Further honours were won in the Peninsular War, while at

Waterloo the regiment took part in the charge against Napoleon's imperial guard. Later campaigns



Highland Light Infantry badge

were in South Africa, 1851-53, the Crimean War, the Indian Mutiny, the Egyptian War, 1882, including the storming of Tel-el-Kebir, and the South African War, 1899-1902, where it was engaged at the Modder River and at Magersfontein.

In the Great War the two regular battalions were early in France. The 2nd crossed in Aug., 1914, as part of the second division. The 1st went from India somewhat later, and with the 9th battalion (Territorial) saw fighting at La Bassée, Dec., 1914.

Battalions fought in the first battle of Ypres, 1914; at Loos, 1915, in which the 2nd, 10th, 11th, and 12th battalions also took part; and on the Somme, 1916. In September, 1918, a party of the 1/5th battalion made a notable stand at Moeuvres. In 1915

other battalions were in Gallipoli. The depot is at Hamilton, Lanarkshire. See Army, colour plate.

Highland Mary. Heroine of some of the noblest of the songs of Robert Burns (*q.v.*). According to the generally accepted theory, her name was Mary Campbell, and she and the poet plighted troth and exchanged bibles, but marriage was made impossible by her sudden death at Greenock in 1786. She was buried in the graveyard of Old West Kirk, Greenock, where a monument was erected to her memory. In 1920 her remains were reinterred in Greenock cemetery, the old burial ground having been absorbed by the extension of a shipbuilding yard. See Dunoon; consult Burns, W. E. Henley, 1898.

Highland Railway. Scottish rly. co. A line between Inverness and Nairn was opened in 1855. In 1865



Highland Mary. The monument as it stood in the graveyard of Old West Kirk, Greenock

this and other small companies were amalgamated, and the name Highland Rly. was adopted. In 1884 the Sutherland and Caithness and other lines were taken over, while various extensions were added to the mileage. The line serves Inverness and the extreme N. of Scotland, i.e. the counties of Inverness, Ross, Cromarty, Sutherland, and Caithness, while southward it connects with the Caledonian near Perth. With its headquarters at Inverness, it owns 484 m. of line, and its capital is nearly £7,000,000.

Highland Regiments. General name for those regiments of the British army, five in number, that are recruited in the Highlands of Scotland, and wear the kilt. They are the Black Watch, or Royal Highlanders, 42nd and 73rd; Seaforth Highlanders, 72nd and 78th; Gordon Highlanders, 75th and 92nd; Cameron Highlanders, 79th; and the Argyll and Sutherland Highlanders, 91st and 93rd. The Highland Light Infantry, in spite of its name, is not a Highland regiment; the men are recruited mainly in Lanarkshire, while they do not wear the kilt. *See* Gaiters.

Highlands, THE. Name given to that part of Scotland lying N. and W. of a line drawn from Dumbarton on the W. to Stonehaven on the E. The limitations are vague, but it is customary to exclude the coastal parts of Aberdeenshire, Nairn, Elgin, and Banff, and the Orkneys and Shetlands. It thus denotes generally the mountainous parts of the country and those, apart from Caithness and the Orkneys and Shetlands, where the Celtic race and the Gaelic speech predominate. The physical configuration of these parts, their relative inaccessibility and barrenness, and the racial characteristics of the inhabitants have combined to give the Highlands a distinctive place throughout Scottish history, and the "Highland line" still marks real differences in the life and manners of the two portions of Scotland.

Inverness is usually counted the capital of the Highlands. In the glens and other fertile tracts agriculture is carried on, mostly in small-scale farming; the croft-system prevails in many of the remoter districts. Sheep-rearing is of great importance, sturdy hill-sheep, especially of the black-faced varieties, being bred in large numbers. The grouse-moors, deer-forests, and salmon fisheries are of economic importance, and, apart from the wealthy classes who enjoy these sports, the summer months bring numerous tourists, e.g. to Oban, Kingussie, or Strathpeffer.

The earliest history of the Highlands is obscure; neither ethnologists nor antiquarians have determined the precise development of the possibly Iberian dwellers of prehistoric times, of the Goidels, Caledonians, and Picts or Cruithnigh. The coming of S. Columba to Iona, A.D. 563, marks the beginnings of Christianity in the Highlands, but their history throughout the Middle Ages and the following centuries is a long record of confused wars, now with Norsemen, now with Lowlanders, now among the rival clans.

The first great step towards settling the Highlands was the Statutes of Iona, 1609, when Bishop Knox of the Isles arranged a compact with the great chiefs to regulate such matters as the maintenance of churches and clergy, the reduction of the chiefs' retinues, education, carrying of firearms, maintenance of inns, etc. Later came the road-building of General Wade, 1725, and the wholesale abolition of hereditary jurisdictions of the great chiefs, 1748. But conditions remained primitive until well on in the 19th century. Agriculture was improved by the Highland and Agricultural Society, founded 1784; but prolonged emigration, and the great "clearances" of crofting areas to make room for sheep-runs in the early 19th century, left results which are still felt in some districts. Thus it is not uncommon to find glens which now hold a mere handful of inhabitants, where formerly, as local records and the remains of cottages and sheilings attest, scores of families were able to subsist. But it is certain that, under modern conditions, many such tracts are economically more fitted for sheep than smallholders.

The spread of education and improved transport facilities have greatly modified the distinctive life of the old Highlanders, but the Gaelic tongue survives in many parts, particularly in the W., either alone or side by side with English. The Celtic customs and folklore are not forgotten, and the Highland gatherings, e.g. of Braemar or Blair Atholl, foster the old pipe-music, dances, and sports. Indeed, recent years have seen a marked revival of the old language, music, and traditions which were in grave danger of obliteration. *See* Celt; Clan; Gaelic; Scotland; consult also History of the Highlands and Gaelic Scotland, D. Mitchell, 1900; Language and Literature of the Highlands, J. S. Blackie, 1872.

J. E. Miles

HIGHLAND DRESS. A form of kilt not uncommon in Europe in early times. It was used notably by the

Romans, was common to the Irish, the Manx, the Welsh, and ancient Britons, and is still the national garb of the Albanians. In Scotland it appears on the earliest known records of that land, the sculptured stones. Among these the Dupplin Cross is cited by Skene; the St. Andrews altar slab, found 6 ft. below the ground, is referred to by Romilly Allen as bearing a figure who wears a plaid and kilt. These monuments prove that the ancient Scots, when hunting or on horse-back, wore a kilt-like dress, falling below mid-thighs, and a plaid across the shoulders. Beneath the dress the Highlanders wore what was called the *leni croich* or Highland shirt, in Ireland called the linn, which it was the custom to dye with saffron.

Early Form of Dress

The Scottish dress differed from the Roman, Welsh, and, at any rate from the later forms of, the Irish and Manx kilts, in the important fact that it—an *breacan feilidh*—formed a covering for the whole upper part of the body. It consisted of a great piece of tartan cloth. This was spread out upon the floor while the owner carefully kilted, that is pleated, one end of it. He then lay down and fastened the kilted portion round his waist with a belt. The unkilted part lent itself to great diversity of arrangement; one of the commonest methods was to draw it up the back and on to the front of the shoulder, where it was fastened by a brooch of large size, ornamented generally with interlaced patterns and cairngorm stones. This arrangement left a picturesque loop at each hip. The sword arm was unobstructed. The back portion could also be formed into a cloak which covered the head. The kilted portion was shorter than is now customary in the modern stitched and detached kilt or *feilidh beag*.

The length of the *breacan feilidh* was probably 12 yards. The short jacket opened down the front as in the time of the ancient Britons; the hose and the broad bonnet came later. The latter, with its red tourie, looks as though it had been evolved from the round, oval-topped morion which is shown on the sculptured stones, notably on the Aberlemno stone.

The Glengarry bonnet was said by Logan to be only some forty years old, but it is improbable that a race so loyal to ancient custom should invent a new bonnet to replace the older famous one. An examination of the drawings of the Forteviot stone, which is probably as ancient as its model-



Highland Dress, as worn by: 1. The Campbells of Breadalbane; tartan, green with double stripes of yellow. 2. The MacDonalDs of Clan Ranald; tartan, dark and light green with red stripes; the figure is armed with sword and leather target. 3. The Camerons in the 18th century; tartan, red with green and white stripes

ling is primitive and crude, brought the writer to the conclusion that the figure portrayed is wearing a "Glengarry" with a decoration along the front, where we now place the *dam brod* or chequers. At the back a tuft of hair is showing, and round this flow what look like the tails of a bonnet. The Glengarry shape may have descended from the cap of maintenance. The truis or trews (skin-tight breeches) are as ancient as the plaid. Similar truis were worn by the most servile class in ancient Ireland, and amongst the Britons. They were probably inherited from the slaves who, amongst the Gaels, were either of the conquered earlier race, or Gaels who had lost their rank as freemen.

The modern form of kilt, or *feilidh beag* (i.e. little covering), can be traced to 1626, when it appears on the arms of the Burnets of Leys. The feathers worn in the Highland bonnet were, says General Stewart (1822), a privilege accorded as a token of gentility. The jacket and the hose were also of tartan, as were the trews. The hose were often made without feet, and were in that case known as *mogans*. The *bhrogan* (vrogan), i.e. shoes, were cut to the actual shape of the foot, and had holes in them for the escape of water. The *breacon feilidh* was common to the greater part of Scotland, and after the conquest of the Lothians, if it had ever died out there, which is doubtful, became common to all Lowland Scotland. Part of

it, the plaid and braid, or Kilmarnock Tam o' Shanter, actually lingered there till the 20th century, though now seldom seen in the market places of Hawick and other Border towns. The Highland dress was proscribed by Act of Parliament in 1747, but the Act was repealed amid great rejoicing in 1786. See Bagpipes; Celt; consult also Celtic Scotland, W. F. Skene, 1876-80; Highland Dress, Arms and Ornament, Lord Archibald Campbell, 1899. **McKenzie McBride**

Highness. Title of honour. Highness, Grace, and Majesty were applied to English sovereigns until the reign of James I, when Majesty became the official style. In the British royal family, Royal Highness is used for children of the sovereign, and for his or her brothers, sisters, uncles, aunts, grandchildren, if children of sons, and great-grandchildren, if children of the eldest son of a prince of Wales; nephews, nieces, cousins, and children of daughters are called Highness.

High Priest. Head or chief priest of the Jewish Church. From Aaron, to whom priestly authority was delegated by Moses, the office descended by primogeniture. There appear to have been about 80 high priests beginning with Aaron and ending with Phannius, but the direct Aaronic line ended with Eleazar. Their history covers a period of about 1,370 years. Their consecration was attended by elaborate ritual, their dress was distinctive, and their duties included the privilege of entering the

Sanctuary on the Great Day of Atonement to make propitiation. Details of their consecration, etc., are given in Exodus, Leviticus, and Numbers. See Aaron; Breastplate; Ephod; Priest; consult also Josephus's Antiquities of the Jews.

High Seas. Name given to the open sea, i.e. those parts of the ocean that are not under any territorial sovereignty, being more than three miles from any shore. Germany called her fighting fleet the high seas fleet. See Freedom of the Seas.

High Sheriff (A.S. *scire gerefa*, reeve, or officer of the shire). One of the principal subordinate magistrates in England to whom the custody of the county is committed by the crown by warrant under the hand of the clerk of the privy council. In some counties the office was anciently hereditary, in others elective, subject to the royal approval. To obviate the inconveniences of popular election, a statute of Edward II enacted that the sheriffs should be assigned by the chancellor, treasurer, and judges; and since the reign of Henry VI the custom has been for all the judges, with the other great officers and privy councillors, to meet in the exchequer on the morrow of S. Martin, and to propose three persons to be reported, if approved, to the sovereign, who afterwards pricks one of them, i.e. appoints him sheriff.

Formerly the powers and duties of the high sheriff were very great in his fourfold capacity of judge,

keeper of the peace, ministerial officer of the superior courts of justice, and bailiff of the sovereign. In modern times his duties are mainly performed by an under-sheriff, who is usually a solicitor, and the high sheriff is the chief personage of the county who receives the judges on circuit, acts as returning officer at elections, executes civil judgements, and sees to the due carrying out of the death sentence. Sheriffs hold office for a year, and no man who has served can be compelled to serve again within three years. *See* County; Sheriff.

High Tor. Hill near Matlock, Derbyshire. It is on the left bank of the Derwent, between Matlock and Matlock Bath, and is 380 ft. high. On the other side of the pass, which it helps to form, are the Heights of Abraham. Beneath the hill is the High Tor grotto, famous for its crystallisations. *See* Matlock.

High Water. Term used for the normally highest limit of the rise of the tide in the sea or river, and for the time of such rise. High water at any particular place by the sea happens on the average every 12 hrs. 25 mins., so that it becomes 50 mins. later each day. Successive high waters are often not of the same height, and vary considerably at different times of the year according to the lie of the land. High water level in rivers is usually the highest flood level. *See* River; Tides.

Highwayman. Name given to the mounted robbers who infested the public roads in England from the first half of the 17th century until the early 19th. In literature the highwayman was a familiar figure, for which Falstaff suggested such poetical designations as "Diana's foresters, gentlemen of the shade, minions of the moon."

Among well-known knights of the road are Claude Duval (1643-1670), who is remembered by the episode depicted in W. F. Frith's painting, where he is dancing a coranto with a lady, whose husband, after paying £100 for the entertainment, was allowed by the gallant highwayman to keep the remaining £300 in his bag; and Dick Turpin (1706-1739).

To these may be added John or William Nevison (1639-1684), nicknamed "Swift Nicks" by Charles II; John Cottington (1611-1656), called "Mulled Sack" from his favourite beverage, who held up the army-pay wagon on Shotover Hill and decamped with £4,000; Jack Rann (d. 1774), the dandy highwayman, nicknamed "Sixteen-String Jack" from the

bunches of ribbons at his knees; and Louis Jeremiah Abershaw or Avershawe (c. 1773-1795), commonly known as Jerry Abershaw.

Highways. Main roads from one town to another open of right to all passengers. In the United Kingdom every parish is bound of common right to keep in repair the roads that go through it. A statute of Philip and Mary enacted that surveyors of the highways

one by the 33rd div. on July 20. On Sept. 3 the 1st div. gained the German switch line running through it, but lost it soon afterwards. The wood was carried by the 47th div. on Sept. 15. During the fierce fighting the wood was completely destroyed. *See* Somme, Battles of the.

High Wycombe OR CHIPPING WYCOMBE. Mun. bor. and market town of Buckinghamshire, England.



High Tor, Derbyshire, seen from the banks of the river Derwent

should be appointed by the constable and churchwardens of the parish, and another statute of William IV provided for their appointment by the justices if not elected by the inhabitants.

These surveyors were superseded by highway boards for highway districts to which the parishes in the district returned way wardens; and the highway boards in turn were replaced by the urban authorities constituted in 1875. Finally in 1888 the Local Government Act committed the maintenance of the highways to the county councils, the powers of rural sanitary and highway authorities being afterwards (1894) transferred to the district councils of the rural districts. *See* Roads.

High Willhays. Mt. of Devon, England. It is 4 m. S.W. of Okehampton, and is the highest point on Dartmoor, 2,039 ft.

High Wood. English name for a wood of France, Bois des Four-eaux, in the dept. of Somme. It stood on a hill 1 m. N.E. of Bazentin-le-Grand (q.v.), and became prominent in the Great War. British cavalry penetrated it on July 14, 1916, and it was afterwards the scene of a number of attacks, notably

Situated in a valley, at the foot of the Chiltern Hills, 27 m. from Paddington on the G.W. and G.C. joint rly., its parish church, the largest in the co., was founded in the 11th century, has 13-16th century remains, and was restored in 1893. It has a monument to the 1st earl of Shelburne, some time owner of the

Wycombe Abbey estate, which passed by purchase to the 1st Baron Carrington in 1749. Wycombe Abbey school for girls is in the grounds of the earl of Shelburne's house. Daws Hill Lodge is a residence of the marquess of Lincolnshire. Each inhabitant possesses grazing rights on a common called The Rye.



High Wycombe Market House

The Little Market House dates from 1604, the town hall from 1757. Near by are Hughenden, in 1839-81 the home of the earl of Beaconsfield, and Penn, the supposed birthplace of William Penn. High Wycombe is a centre of furniture-making. Paper is also made. It returns one member to the House of Commons. Pop. (1921) 21,952. *See* Beaconsfield, Earl of.



High Wycombe. Guildhall and market place of the Buckinghamshire town

H.I.H. Abbrev. for His (or Her) Imperial Highness.

Hilary or **HILARIUS** (c. 300-368). Saint and bishop. Born at Poitiers, France, the son of pagan parents of high social standing, he was converted to Christianity about 350. Chosen bishop of his native city about 353, probably from the rank of a laic, he became famous as an opponent of Arianism. He was banished to Phrygia by the Emperor Constantius, 356-360. He died at Poitiers, Jan. 13, 368, and was declared a doctor of the Church by Pius IX, 1851.

Hilary wrote a History of Synods, a survey of the councils of the East on Arianism; a defence of the Nicene faith, addressed among others to the British bishops; a work of permanent value on The Trinity, defining the philosophic doctrine of the divinity of Christ, and a smaller tractate against the Arians. His other writings included a commentary on Matthew and an exposition of the Psalms. His hymns are lost. Churches at Wallasey, Cheshire; Spredlington, Lincolnshire; and the village and church of S. Hilary, Cornwall, are named in his memory. See S. Hilary of Poitiers, J. G. Cazenove, 1883.

The name Hilary Sittings, peculiar to the English law courts, is a survival of Hilary Term (Jan. 11-Jan. 31), named after the festival of the saint, and one of the four terms of the legal year, for which Hilary Sittings was substituted in 1873. These sittings begin on Jan. 11 and end on the Wednesday before Easter. In the Inns of Court (*q.v.*), Hilary is one of the four dining terms, Jan. 11-Feb. 1. Hilary term is the name given at Oxford University to the term which begins on Jan. 14 and lasts until the Saturday preceding Palm Sunday. See Term.

Hilda or **HILD** (614-680). English saint and abbess. Daughter of a nephew of King Edwin of Northumbria, and baptized by Paulinus in 627, she adopted the monastic habit when 33 and went to East Anglia with a view to emulating the example of her sister Hereswid, a nun of Chelles, near Paris. She became abbess of Hartlepool, and in 657 founded the Benedictine abbey at Whitby where, as at Hartlepool, she presided over a community of men and women. Here she received the poet Caedmon (*q.v.*), who, under her advice, became a monk; her counsel was sought by some of the most influential people in the country. Shortly after founding a monastery at Hackness, she died at Whitby, Nov. 17, 680. See Vita Sanctae Hildae, A. D. H. Leadman, 1902; Dictionary of Saintly Women, A. B. C. Dunbar, 1904.

Hildburghausen. Town of Germany, in Saxe-Meiningen. It stands on the Werra, 10 m. by rly. S.E. of Meiningen, and S. of the Thuringian Forest. It possesses an old Rathaus, a technical institute, and school of agriculture, as well as several churches. It has also a park and a theatre. The castle, in which its dukes formerly lived, is now a barracks. There are a number of manufactures, chiefly textiles, but also toys and machinery. Hildburghausen was in the Middle Ages part of Thuringia, and then of Saxony. From 1683 to 1826 it was the capital of the small duchy of Saxe-Hildburghausen. The palace was built before 1700, by the first duke. Pop. 7,700.

Hildebrand. Name of Gregory VII before he was chosen pope. Of Teutonic origin, it means battle-sword, and appears in the Nibelungen Lied. It is occasionally used as a Christian name to-day. See Gregory VII.

Hilden. Town of Germany, in the Rhine prov. of Prussia. It lies 6 m. S.E. of Düsseldorf, and is an industrial town. Among its manufactures are machinery, carpets, and other textiles. Pop. 16,900.

Hildesheim. City of Germany, in the Prussian prov. of Hanover. It lies 18 m. S.S.E. of Hanover, in the valley of the Innerste. The chief ecclesiastical buildings are the cathedral, S. Michael's Church, and the churches of S. Andreas, S. Godehard, and the Magdalen. The cathedral, erected in the 11th century, suffered from unwise restoration in the 18th; it contains some good early work and many relics and antiquities. S. Michael's, founded in the 11th century, was restored in the 19th century, and is one of the most

beautiful Renaissance churches in Germany. On the flat ceiling of the nave are some paintings illustrating the genealogy of Christ. The city has many interesting secular buildings, among them the Rathaus (14th century), the Kaiserhaus, and the Tempelhaus. A wooden building, the restored guildhouse of the butchers, is noteworthy, as are the market square of the old town and a fountain. Of the museums the Römer is the chief. The suburb of Moritzberg has an abbey church dating from the 11th century and restored in the 18th. The city's industries include ironfounding and sugar-refining. It has a service of electric tramways.

Hildesheim was made the seat of a bishop in 814. In 1241 it joined the Hanseatic League and was a free city until 1803. It was in the Middle Ages a centre of German art. Pop. 54,800.

Hill, ROWLAND HILL, 1ST VISCOUNT (1772-1842). British soldier.

Born at Prees Hall, near Hawk-



1st Viscount Hill,
British soldier
After W. Haines

stone, Shropshire, Aug. 11, 1772, he was a son of Sir John Hill, Bart. He entered the army in 1790, and served under Abercromby in Egypt in 1801, being in command of the 90th regiment. During the Peninsular War he was present at most of the chief battles, and at the end of the war was one of the five of Wellington's chief officers honoured with a peerage in 1814. He also did notable service at Waterloo. He was commander-in-chief from 1828-42, a position which he filled with conspicuous success. In 1842 he was created Viscount Hill, and died near Shrewsbury, Dec. 10, of the same year.

Hill, CARMEN (b. 1883). British singer. Born in Aberdeen, she studied at the Royal Academy of Music, and made her first public appearance in London in 1903. Her success made her well known as one of the leading mezzo-soprano singers in Britain.

Hill, DAVID JAYNE (b. 1850).

American historian and diplomatist. Born at Plainfield, New Jersey, June 10, 1850, he was educated at Bucknell University, and in Paris and Berlin. He was



David Jayne Hill,
American historian



Hildesheim. The Roland Hospital,
with carved beams and panels.
built in 1911

president of Bucknell, 1879-88, and of the University of Rochester until 1896. As an authority on diplomacy and international law, in 1899 he was appointed professor of European diplomacy in the school of comparative jurisprudence at Washington, and concurrently was an assistant secretary of state. From 1903-11 he represented his country as ambassador in Europe: first to Switzerland, then to the Netherlands, and from 1908-11 in Berlin.

He was a member of the Hague Tribunal, and a delegate to the second peace conference. In 1914 he was an unsuccessful candidate for the Senate. Hill's most important books are on diplomacy, especially his valuable *A History of Diplomacy in the International Development of Europe*, in six vols. He also wrote lives of Washington Irving, 1879, and W. C. Bryant, 1879; *The Life and Work of Hugo Grotius*, 1902; and *Impressions of the Kaiser*, 1918.

HILL, FLORENCE DAVENPORT (1829-1919). British philanthropist. Her early childhood was spent in

the Vale of Health, Hampstead, where her parents enjoyed the society of Leigh Hunt, Joanna Baillie, and others. When still in her girlhood she assisted her father, then recorder of



Florence D. Hill,
British philanthropist
Elliott & Fry

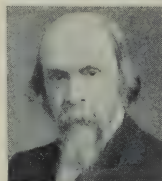
Birmingham, in his many writings to promote the creation of reformatories for juvenile offenders. In 1868 she wrote *Children of the State*, in which she urged the abolition of the old system of herding them together in workhouses, and advocated boarding out in cottage homes.

In the early 'seventies she became one of the first female poor law guardians. In 1908 Miss Hill drafted the bill for the installation of children's courts, which secured that reform. She also took a great interest in female suffrage. Her home at Headington, near Oxford, was a philanthropic centre. In her work she was actively assisted by her sisters Rosamond and Joanna. She died Nov. 2, 1919.

HILL, GEORGE BIRKBECK NORMAN (1835-1903). British author. Born at Tottenham, Middlesex, England, June 7, 1835, he was a nephew of Sir Rowland Hill, the postal reformer. Educated at Bruce Castle School and Pembroke College, Oxford, he was, 1859-76, headmaster

of Bruce Castle School, founded by his father, and then adopted authorship, devoting himself especially to the life and times of Samuel Johnson. He died at Holly Hill, Hampstead, Feb. 27, 1903.

He brought out *Dr. Johnson, His Friends and His Critics*, 1878; *Wit and Wisdom of Dr. Johnson*,



G. Birkbeck Hill,
British author
Elliott & Fry

1888; *Footsteps of Dr. Johnson in Scotland*, 1890; *Johnsonian Miscellanies*, 2 vols., 1897; edited *Boswell's Correspondence*, 1879; *Boswell's Life of Dr. Johnson*, 6 vols., 1887; *Rasselas*, 1888; *Select Essays of Dr. Johnson*, 1889; *Letters of Johnson*, 2 vols., 1892; *Johnson's Lives of the English Poets*, 3 vols., 1905; and was the author of *A Life of Sir Rowland Hill*, 2 vols., 1880; *Colonel Gordon in Central Africa*, 1881; *Goldsmith's Traveller*, 1888; *Worldly Wisdom of Lord Chesterfield*, 1891; *Writers and Readers*, 1892; *Harvard College*, by an Oxonian, 1894; *Letters of D. G. Rossetti to William Allingham*, 1897; *Unpublished Letters of Dean Swift*, 1899; and *Memoirs of the Life of Edward Gibbon*, 1900. His letters appeared 1903-6.

HILL, JAMES JEROME (1838-1916). American rly. magnate. Born in Ontario, Sept. 16, 1838, he graduated at Yale and from 1856-65 was employed in clerical work in St. Paul, Minnesota. In the latter year he became agent of the N.W. Packet Co. and in 1870 organized the Red River Transport Co., by which communication was established between St. Paul and Winnipeg. From 1879-90 he controlled the St. Paul, Minneapolis, and Manitoba railroad, which he had founded, and on its incorporation with the Great Northern became president of the latter, which, with its transcontinental line to Puget Sound, ran a steamship line to China and Japan. Hill controlled many large railway and banking enterprises. He died May 29, 1916.

HILL, JOHN (c. 1716-75). British quack doctor. An unsuccessful apothecary with a leaning towards literature, in 1746 he produced *The British Magazine*, and on the death of this journal contributed a series of gossiping letters signed *The Inspector to The London Advertiser*, which gained him a certain reputation. Running foul of Fielding, he drew on himself a severe castigation in the latter's *Covent Garden Journal*, 1752; he

also abused Garrick, Woodward the actor, and Christopher Smart. In 1759 he returned to his herbal studies and began *The Vegetable System*, an undertaking which reduced him to poverty, and he was obliged to earn a livelihood by quack doctoring. He died Nov. 21, 1775. His life's work may be summed up in Garrick's epigram: *For physic and farces his equal there scarce is, His farces are physic, his physic a farce is.*

HILL, LEONARD ERSKINE (b. 1866). British physiologist. The son of G. Birkbeck Hill, he was born June 2, 1866, and educated at Haileybury. Graduating at University College, London, he became professor of physiology in the London Hospital. Amongst other works he published *Physiology and Pathology of the Cerebral Circulation*, 1896; *Manual of Human Physiology*, 1899; *Physiology for Beginners*, 1902; *Text-book of Physiology*, 1919.

HILL, OCTAVIA (1838-1912). British philanthropist. She received her education at home, and early



Octavia Hill,
British philanthropist
After Sargent, by courtesy of Charity Organ. Society

undertook the management of homes for the people in London. Among her numerous charitable and social activities were efforts on behalf of women's university settlements, the

preservation of the public commons and of places of historic interest. She was connected almost from the first with the Charity Organisation and Kyrle societies. She was a member of the royal commission on the Poor Laws, 1905. Among her published works were *Homes of the London Poor*, and *Our Common Land*. She died Aug. 13, 1912.

HILL, SIR ROWLAND (1795-1879). British reformer. Born at Kidderminster, Dec. 3, 1795, he was for some time engaged in teaching, after which he devoted his attention to matters of social and public interest.

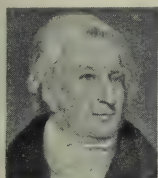
In 1837 he published a pamphlet entitled *Post Office Reform*, in which he advocated a uniform rate of postage at a penny a half ounce prepaid by an adhesive



Rowland Hill
After Vinter

stamp. Despite official opposition a bill to this effect was carried through Parliament in 1839, and on Jan. 10, 1840, penny postage came into force. In 1846 he was presented with £13,000 raised by public subscription; in 1847 he was made an under-secretary at the post office. He was chief secretary 1854-64, and was made a K.C.B. in 1860. He died at Hampstead, Aug. 27, 1879.

Hill, ROWLAND (1744-1833). English preacher. Born at Hawkstone Park, Aug. 12, 1744, the son of Sir Rowland Hill, Bart. (d. 1783), he was educated at Eton and St. John's College, Cambridge. In 1773 he became curate at Kingston, Somersetshire, being then in deacon's orders. Rejected for the priesthood owing to his eccentricity, he continued to preach about the country as one of the numerous and nominal chaplains to Selina, Lady Huntingdon (*q.v.*). In 1783 he commenced a ministry at Surrey Chapel, Blackfriars Road, London, built by himself, where he attracted huge congregations. He died April 11, 1833. His book, *Village Dialogues*, went through numerous editions.



Rowland Hill,
English preacher

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Hill 60. A low, almost invisible eminence, 2½ m. S.E. of Ypres, near Zillebeke, Belgium. It was of tactical importance in the Great War, as the fire from it enfiladed the British position in the Ypres salient, and the summit gave the Germans good observation of the British movements. In April, 1915, six mines were run under it, each containing a ton of explosives, though owing to the wetness of the ground mining operations here were of peculiar difficulty. The date fixed for their explosion was 7 a.m. on April 17, when the hill was to be assaulted by two battalions of the 13th brigade. The effect of the mines was great, and before the smoke had scattered the British had seized the top.

Their task was then to consolidate their position under the heavy fire of the German artillery, which was at once turned upon them, and to construct the necessary communication trenches. All the night of April 17-18, German bombing parties attacked, working forward amidst the numerous shell craters which covered the slopes of the hill. At dawn there was a more resolute advance by the Germans, and they actually

reached the crest, on part of which they established themselves. In the evening of the 18th the British infantry once more assaulted this German lodgment and cleared it out after a desperate struggle in which the British losses were over 1,500. Next day the Germans redoubled their bombardment, with serious effect.

The summit was small and only a few men could be stationed on it without dangerous overcrowding. All April 19, 20, and 21, the crest was held, though the casualties multiplied fearfully. By the night of April 21, when the Germans temporarily ceased their attacks and relaxed the vehemence of their fire, the British losses on the hill exceeded 3,000. It remained in British hands without challenge until May 1, when the Germans attempted to overwhelm its small garrison with chlorine gas, discharged from cylinders, and did actually kill or put temporarily out of action most of the garrison, but they were not able to establish themselves in the British works owing to the fumes.

On May 5 they repeated this gas attack and rendered the sole British trench on the summit untenable, seizing it when the fumes were dissipated. Thus, the crest once more passed into their possession, though the British could not be dislodged from the western slope, to which they clung resolutely. Until June, 1917, the crest remained in German hands. It was recovered by the British in the operations for the capture of the Messines Ridge, but it once more passed to the Germans when, after the German offensive on the Lys, Kemmel Hill fell into their hands, and the British had to draw in their lines before Ypres and prepare for a possible evacuation of the salient, in April, 1918. It was recovered with ease in the offensive of Sept., 1918. The site of the hill was purchased in 1920 for a war memorial. *See* Hooge.

Hill 60. Hill in Gallipoli peninsula, in the northern part of the Sari Bair range (*q.v.*). In the course of the British campaign there in the Great War, Australian infantry, on Aug. 21, 1915, drove the Turks from their trenches on the hill, enabling the British line to be linked up with a trench line instead of isolated posts. *See* Gallipoli, Campaign in; Suvla Bay, Battle of.

Hill 63. Hill of Belgium, in the prov. of W. Flanders. About 1½ m. N.W. of Ploegsteert Wood and 206 ft. high, its commanding position made it a famous observation post for the British in the Great War. In the German offen-

sive towards the Channel Ports in April, 1918, it came into great prominence, being defended by the 25th div., on April 11. Subsequently taken by the Germans, it was recaptured by the 29th and 36th divisions early in Sept. *See* Flanders, Battle of; Ypres, Battles of.

Hill 70. Hill of France, in the dept. of Pas-de-Calais. It is 230 ft. high and overlooks Loos on the S.E. and dominates Lens. In the battle of Loos, Sept., 1915, being then behind the German reserve line, it was a main objective of the British; it was captured on Sept. 25 by the 15th Scottish div., but the position N. of it was lost the following day. The Guards made a brilliant attack on the hill, Sept. 27, and the ground to the N. was recaptured next day. The hill, the greater part of which was left in the German possession, was finally taken by Canadian troops in Aug., 1917. *See* Loos, Battle of.

Hill 70. Hill in Gallipoli peninsula, 3 m. E. of Suvla Bay. It is also known as Scimitar Hill, and forms one of a group of hills behind the Suvla Plain. It was the objective in the second phase of the Suvla operations, Aug., 1915. After a strong bombardment by the British, the 87th Brigade, at 3.30 p.m., Aug. 21, advanced against the hill, which was strongly entrenched by the Turks. The 1st Inniskilling Fusiliers and the 1st Border Regiment almost gained the crest, but the Turks' guns from behind Hill 100 kept them from completely winning the hill.

An attack on the S. side by the 2nd S.W. Borderers failed. At 5 p.m. the mounted div., consisting of Yeomanry, formed up below the 87th brigade between the two hills, and as darkness fell charged up Hill 70. They reached the southern top and occupied part of the enemy's trenches, but retreated owing to the Turks' gun-fire. Another attack later in the evening carried the Yeomanry to the crest, where they bayoneted the Turks in their trenches, and went down the reverse slopes in pursuit of the enemy. The position was abandoned during the night. *See* Gallipoli, Campaign in; Suvla Bay, Battle of.

Hilla or **Hilleh.** Town of Mesopotamia. Situated on the Lower Euphrates, and built amid the ruins of Babylon, it is about 60 m. S. of Bagdad on the rly. from Bagdad to Basra. Kerbela lies a few miles N.W. and Nejef about the same distance S.W. of it, and it is much frequented by Shiah pilgrims on their way to those Holy Cities. Pop. about 30,000.

Hiller, FERDINAND (1811-85). German composer and pianist. Born at Frankfort-on-Main, of Jewish parents, Oct. 24, 1811, he showed great gifts as a pianist when still a youth. After living in Paris for some years, where he played frequently, he went in 1850 to Cologne, where he organized the Conservatoire and became its first director, retaining that post until his death, May 10, 1885. Hiller's compositions include operas, sonatas, quartets, etc.

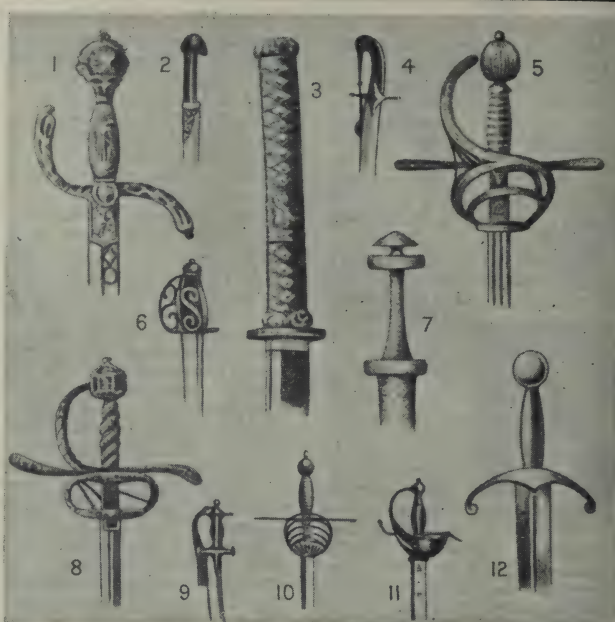
Hill-fort. Stronghold erected upon the summit of a natural eminence. Developed in the late neolithic and early metal ages, sometimes for occasional refuge rather than continuous occupation, many thousands are scattered throughout the United Kingdom. They usually comprise artificial ramparts following the contour of hilltops, and utilising natural defences where they exist. In England and Ireland they are usually of earthwork, in Wales and Scotland more commonly of stone.

Notable examples are those on the Herefordshire Beacon near Malvern; Chantonbury Hill, Sussex; Hembury Fort, Devon; Pillesdon Pen and Maiden Castle, Dorset; Castle-an-Dinas and the drystone Carn Brea, Cornwall; and Tre'r Ceiri, Carnarvonshire. Some of them became adapted to Roman, Saxon, and even Norman use. Similar earthworks in Ireland are called raths, as on Tara Hill, co. Meath. The Aran Isles, off Galway, contain some superb stone forts which—as in N. Scotland—are called duns.

Hill-forts arose in ancient Palestine, as at Gezer, and were greatly developed by the ancient and medieval military communities of Europe and Asia, being found from the Pyrenees to the Indo-Afghan frontier, with neolithic examples in the Deccan. There are hundreds of them in New Zealand, with palisaded ramparts and ditches, ultimately derived from prehistoric contact with these Caucasian models. Primitive strongholds were sometimes established in such commanding situations that they gave birth to some of the world's greatest cities, such as Jerusalem, Athens, Rome, and Edinburgh. *See Dun; Rath; Vitrified Fort.*

Hillhead. Parish and burgh of Lanarkshire, Scotland. It is connected with Glasgow, of which it forms a residential suburb, by a bridge over the Kelvin, rebuilt in 1894. Glasgow University is in Hillhead. *See Glasgow.*

Hillsborough. Market town of co. Down, Ireland. It is 12 m. from Belfast, and is served by the



Hilt. 1. Italian sword, 16th century. 2. Turkish yataghan. 3. Japanese, 17th cent. 4. Persian sabre. 5. French, 17th cent. 6. Backsword, 17th cent. 7. Sword, 12th cent. 8. Italian, 16th cent. 9. Italian rapier, 17th cent. 10. Bilbaut cut and thrust sword. 11. Cut and thrust, 16th cent. 12. Sikh tulwar.

Great Northern of Ireland Rly., and the Lagan Canal. The chief industry is the linen manufacture. The town arose around the residence of the Hills, hence its name, and the marquess of Downshire, the head of that family, still lives at Hillsborough Castle. Pop. 540.

Hill Tippera. State of India, under the government of Bengal. Its area is 4,086 sq. m. The area under cultivation is uncertain, but rice and cotton are the chief crops. The capital is Agartala. Pop. 229,600, two-thirds Hindus, one-quarter Mahomedans.

Hilmi Pasha, HUSSEIN (1856-1923). Turkish statesman. Having occupied posts in the



Hilmi Pasha, Turkish statesman

Vienna after a brief term as minister of justice. His grand viziership in 1914 was marked by his sympathetic attitude towards British interests and aims in the Great War, and by hostility to Germany. He died April 3, 1923.

Hilt. Handle of a sword. It is an Anglo-Saxon word, and from it comes the phrase "up to the hilt," meaning thoroughly, the sword having been driven in as far as it will go. *See Celt; Sword.*

Hilton, HAROLD HORSFALL (b. 1869). British golfer. Born at West Kirby, Cheshire, Jan. 12, 1869, he won the open golf championship in 1892 and 1897, and the Irish open championship in 1897, 1900, 1901, and 1902. He was amateur champion in 1900, 1901, 1911, and 1913; and runner-up in 1891, 1892, and 1896. In 1911 he won the American amateur championship. He wrote *My Golfing Reminiscences*, 1907.



H. H. Hilton, British golfer

Hilton of Cadboll. Village on the Moray Firth, Scotland. Until 1921 it possessed a sculptured stone containing carvings of high antiquity. In 1921 it was presented to the nation. *See Sculptured Stones.*

Hilversum. Market town of the Netherlands, in the prov. of N. Holland. It is situated in a hilly and sandy district, 18 m. by rly. E.S.E. of Amsterdam, and is a favourite summer resort. It

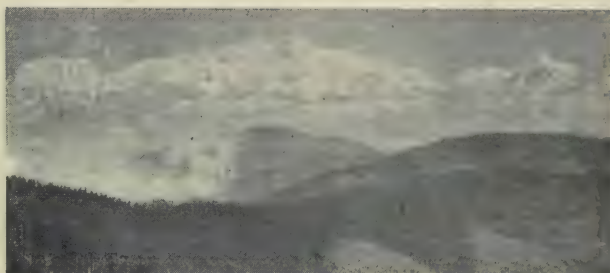
is the junction for Amersfoort, and is connected by steam tramway with Huizen and Laren. The town possesses a town hall, several churches and schools; the Kurhaus Trompenberg lies to the N.W. The industries comprise the manufacture of blankets, carpets, and cotton goods. Pop. 36,750.

H.I.M. Abbrev. for His (or Her) Imperial Majesty.

Himalaya OR HIMMALEH MOUNTAINS (Sanskrit, abode of snow). Vast mountain system of Central Asia, containing the loftiest peaks in the world. From the Hindu Kush and the Pamirs N. of the Indus, the mountains trend S.E. through the state of Kashmir, and along the frontiers of the United Provinces, Nepal, Sikkim, and Bhutan, forming a stupendous barrier between N. India and the high plateau land of Tibet. Thus they may be said to stretch from the confines of Afghanistan to Upper Burma, as the Brahmaputra is regarded as the eastern limit. They occupy the surface of the globe between lat. 27° and 35° N., and long. 72° and 96° E., and are the south-easternmost of the ranges radiating from the Pamir plateau.

The extreme length from W. to E. is about 1,550 m., and the breadth averages 200 m. They must be regarded not as a single range, but rather as a series of parallel chains running diagonally to the general trend of the system. There are also transverse sections, forming knots or jumbles of snow-wrapped summits, separated by gorges, elevated plateaux and valleys, the cradle of many streams and rivers, which are fed by the melting snows of the mountains and flow turbulently through deep chasms.

There are fertile and highly cultivated tracts at the base of the mountains on the Bhutan and



Himalaya Mountains. View from Mount Phalut, Darjeeling, of a portion of the range of everlastingly snow-clad peaks

Nepalese borders, and also a marshy and wooded region known as the Terai, which extends for about 500 m. along the N. frontier of India and Nepal, terminating to the E. of the spot whence the Ganges issues from the heights.

This swampy and unhealthy tract, the home of virulent fevers, is separated from the foothills by a boulder-strewn and scrubby belt, called the Bhabar. Much of it is wildly overgrown, and the streams emanating from the higher ground percolate through the sandy soil to feed the streams that wind about the swampy Terai. Above the Bhabar are the Siwalik Hills (*q.v.*), which reach an alt. of 4,000 ft., and beyond them again rear the giants of the system.

Altitudes of the Range

The average alt. of the Himalayas has been estimated at between 16,500 ft. and 18,000 ft., but there are many summits rearing to a height of over 24,000 ft. The highest known point on the globe, Mt. Everest, which lies on the borders of Tibet and Nepal, reaches the immense alt. of 29,140 ft. Much of the system is still unexplored, and it is conjectured that there may be other summits of even

higher alt. Plans for the ascent of Mt. Everest were under consideration in 1921, and the surveyors attached to the expedition were fully to explore the neighbourhood. Other gigantic summits are Dhaulagiri, 26,795 ft., and Kinchinjunga, with an alt. of 28,146 ft., both in the central part of the system. Chumalhari, in the E., is 23,930 ft. high. If the Karakoram or Muztagh range be included, as it often is, in the Himalayan system, Mt. Godwin Austen, formerly known as Dapsang or Peak K2, may be mentioned, which has an alt. of 28,250 ft., and is second only to Mt. Everest itself.

Among the numerous passes, the loftiest is Ibi-Gamin, which reaches 20,460 ft., N.W. of the giant peak of Nanda-Devi; others are the Muztagh Pass, with an alt. of 19,050 ft., Mana Pass, Bara Lacha, the Parang Pass, and the Chang, all exceeding 16,000 ft. They are all difficult to cross, and the conditions prevailing are semi-arctic. They are mainly used by Indian and Tibetan traders, who load their goods on yaks and goats, and are often attacked by mountain sickness in the higher altitudes. No heavy loads can be carried over



Himalaya Mountains. Map of the great mountain system which divides India from the main part of Central Asia, and contains the world's highest points

these passes, so that the goods exchanged between India and Tibet are necessarily light.

There are few lakes of any importance throughout the system, the chief being the Palti or Yamrok with a circuit of 46 m., which lies N. of Sikkim. The snow-line on the southern face is found at 16,300 ft., while on the northern or Tibetan side it is 17,400 ft. Some of the extensive glaciers, however, descend to as low a level as 11,000 ft. The principal rivers taking their rise from the melting snows of this gigantic rampart are the Ganges, Indus, Jumna, Sutlej, and Brahmaputra, besides hundreds of minor streams. Nearly all these streams carry down tremendous loads of alluvium which have served gradually to build up the stoneless Indo-Gangetic plain, and which now add greatly to the productivity of the areas irrigated from the numerous canals of the Punjab and the United Provinces.

Tropical vegetation may be found up to an elevation of 3,000 ft., including giant rhododendrons, acacias, orchids, palms, and ferns, while tea and cinchona are cultivated. Oaks and chestnuts flourish for another 4,000 ft., after which pine, poplar, spruce, fir, birch, and willow follow to the limit of the tree-line, which on the Tibetan slopes is about 14,000 ft., while on the Indian side it is a little higher.

Animal life is varied and abundant. The tiger, leopard, monkey, many kinds of deer, goat, bear, wolf, rhinoceros, horned sheep, boar, ounce, marmot, flying squirrels, wild cats, and yak are all found. The birds, which include many varieties of pheasants, are numerous, with many of gorgeous plumage. Insects are numerous and troublesome.

A healthy climate prevails in the outer Himalayas, and sanatoria and hill stations have been established at various places. At Darjeeling, at an alt. of 8,000 ft., is the Eden Sanatorium for wounded soldiers. At Simla, at an alt. of 7,000 ft., is the summer residence of the viceroy and an immense sanatorium for Europeans, to which they repair in the hot season. There is a military cantonment at Dalhousie (alt. 7,680 ft.), and a sanatorium at Naini Tal (alt. 6,500 ft.).

The prevailing rocks are granite, crystalline gneiss with mica schist, with intrusions of trap. Sedimentary deposits and fossil marine remains have been found at an alt. of over 20,000 ft. The Siwalik Hills may be a later uplift, while parts of the system W. of Assam are deemed to have been repeatedly submerged and thrown up again.

The Himalayas are the eastern end of a great series of folded mountains, uplifted in Tertiary times, which terminates in Spain on the W., and forms the backbone of Eurasia. When the ancient continent of Gondwanaland broke up towards the end of the Cretaceous period, great volcanic activity occurred in the Deccan, the sole Asiatic relic of Gondwanaland, and a great crumpling of the earth's crust slowly produced the Himalayas, and upraised the great plateau of Central Asia.

Among recent explorers who have essayed the task of scaling these peaks may be mentioned the brothers Schlagintweit, Godwin-Austen, Graham, Waugh, Sir William Conway, Douglas Freshfield, and Mr. and Mrs. Bullock Workman. Graham, in 1883, reached an alt. of 23,700 ft. on Mt. Kabru, while Mr. and Mrs. Workman attained 23,394 ft. on one of the Karakoram in 1903. *See* Darjeeling; Everest.

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Himeji. Harbour of Honshu, Japan, capital of the prov. of Harima. It stands at the junction of three important highways, 34 m. by rly. N.W. of Kobe. The 14th century "Heron Castle," still in a good state of preservation, is used by the garrison troops. The town contains the headquarters of a line of steamers engaged in the coasting and Inland Sea trade. Himeji is noted for its stamped leather work and manufactures cotton goods. Pop. 38,800.

Himera. Greek city of ancient Sicily. It is situated on the N. coast at the mouth of the river of the same name. Here a great Carthaginian army was completely defeated by the Sicilian Greeks under Gelon and Theron in 480 B.C. on the day of the great Greek naval victory over the Persians at Salamis. In 409 the city was destroyed by the Carthaginian general, Hannibal, son of Gisco.

Himyar (Semitic, red people). Ancient people in S.W. Arabia. Wrestling the S. Arabian hegemony from the Sabaeans about 100 B.C., they established a dynasty under which they influenced for several centuries the Abyssinian kingdom of Aksum, until the Mahomedan conquest. The culture and speech of the sedentary Semites of Yemen, formerly called Himyaritic, is now called generically S. Arabian, and specifically Himyarite, Minaean, and Sabaean.

Hinayana (Skt., little vehicle). Term employed by some modern Oriental scholars to denote primitive Buddhism. It serves to distinguish the early doctrinal system, with its arid ethics, agnosticism, and hard asceticism, from the more tolerant Mahayana (great vehicle) of later Indian Buddhism, with its humaner elements, speculative theism, and ritual attractions. Used by some early Sanskrit writers as a term of abuse, it is rarely found in modern India. Its equivalent is sometimes applied, in China and Japan, to elements derived from the earliest missionary teaching, which was based upon the Pali rather than on the Sanskrit texts.

The word is traced back to the Chinese pilgrim Fa-hien, who travelled in the Buddha cradleland early in the 5th century. In that age a Hinayanist was regarded as a member of one of the primitive schools of Buddhist thought. Of these there were commonly said to be 18, but there were actually more, although three or four only were at any time of wide influence. These schools were not sects but modes of thought, comparable with the broad and high forms of modern Anglicanism. They arose between the councils of Vaisali and Pataliputra, 400-250 B.C., and as late as the 7th century A.D. the Chinese pilgrim Yuan Chwang estimated that, of the 200,000 monks then in India, at least two-thirds adhered to the primitive schools. It is on their foundation that the Buddhism of Ceylon, Burma, and Siam arose, although these areas did not remain untouched by Mahayana influences. These, with their worship of Bodhisattvas, or potential Buddhas, and their incorporation of local animistic beliefs, found a sympathetic home in China, Tibet, and Japan. *See* Buddhism.

Hinchinbrook. Island off the coast of N.E. Queensland, Australia. S. of Rockingham Bay, it is separated from the shore of Cardwell co. by a narrow channel, and its S. point faces the headland of Dungeness. The island contains Mt. Hinchinbrook.

Hinchinbrooke. Village of Huntingdonshire, just outside the town of Huntingdon. It is famous because here is Hinchinbrooke House, once the residence of the Cromwell family. It was given to them after the dissolution of the monasteries, and here one of them built a fine mansion in which Elizabeth and later James I were entertained. The Cromwells kept the estate until 1627, and the house is now the property of the earl of Sandwich.

Hinckley. Market town and urban district of Leicestershire. It is on the L. & N.W. Ry., 14 m. S.W. of Leicester. The chief building is the restored Gothic church of S. Mary. There is a free library and a grammar school. The industries are mainly the manufacture of hosiery, boots and shoes, and bricks. Watling Street runs near here, and the place was once a Roman station, many Roman remains having been found near. In medieval times there was a castle here. Pop. 12,800.

Hincks, EDWARD (1792-1866). British Orientalist. Born at Cork, Ireland, Aug. 19, 1792, he graduated at Trinity College, Dublin, and became Protestant rector of Killyleagh, co. Down, 1825. He made solid contributions to the decipherment of cuneiform script and Egyptian hieroglyphics. His First and Second Kinds of Persepolitan Writing, which determined the ancient Persian vowel system, appeared in 1846 simultaneously with Rawlinson's solution, achieved independently at Bagdad. He died at Killyleagh, Dec. 3, 1866.

Hindenburg. German battle cruiser. Built at Wilhelmshaven in 1915, she was engaged in the Great War. She was 610 ft. long, 96 ft. in beam, displaced 28,000 tons, and had engines of 100,000 horse-power, giving a speed of 28 knots. Her armoured belt was 7 ins. thick, and she had a 2½-in. protective deck. She carried eight 12-in. and twelve 5.9-in. guns. Other ships of her type were the Bismarck and the Lutzow; the latter being sunk at Jutland. The Seydlitz—heavily damaged at Jutland—and the Derfflinger resembled her closely. The Hindenburg was one of the ships handed over to the British, Nov. 21, 1918. See Der Krieg zur See, 1914-18, by Commander O. Groos, the first vol. of the official German history of the war at sea, 1920.

Hindenburg, PAUL VON (b. 1847). German soldier. A member of a Prussian Junker family, he was born Oct. 1, 1847, at Posen. Educated at the Military College, he joined the Prussian army in 1865,

and served throughout the Austro-Prussian War of 1866 and the Franco-Prussian War of 1870-71,



Paul von Hindenburg,
German soldier

being present at the battles of St. Privat and Sedan and the siege of Paris. Later he was on the staff of the 1st Army Corps at Königsberg, and devoted himself to the study of the military problems presented by the district of the Mazurian Lakes (Mazurenland).

When a syndicate proposed to reclaim its marshy regions, Hindenburg, supported by William II, successfully opposed the scheme. Rising in rank till he became general of infantry and commander of an army corps, he retired from the army in 1911, and was living at Hanover when the Great War broke out. On the Russian invasion of East Prussia in Aug., 1914, he was appointed to the command of the German forces in that province, and on August 23 established his headquarters at Marienburg. Before the month closed he defeated the Russians disastrously in the battle of Tannenberg, largely owing to his special knowledge of the terrain. He pursued the Russians to the Niemen, but was compelled to retire into East Prussia.

On Sept. 25 Hindenburg was put in chief command of the Austro-German forces which invaded Poland and made the first attack on Warsaw in the following Oct., but without success. In his second attack on Warsaw he defeated the Russians at Kutno on Nov. 15-16, and for this victory was made a field-marshal. During the rest of 1914, throughout 1915, and during the greater part of 1916 he was German generalissimo on the Eastern front. On Aug. 30, 1916, it was announced that Falkenhayn had been removed from the position of chief of the central general staff, and that Hindenburg had been appointed chief of the general



Hindenburg. The colossal wooden statue in Berlin. In aid of war charities nails were purchased and driven into it

staff of the field army. From that time to the signing of the armistice by Germany on Nov. 11, 1918, Hindenburg was the German generalissimo, Ludendorff being his chief of staff. After the German Revolution he remained in command of the German army, but retired into private life in June, 1919. See Out of My Life, Marshal von Hindenburg, 1920.

Hindenburg Line. German fortified system in France in the Great War. After the battle of the Somme, 1916, the German High Command decided to abandon their advanced positions and retreat to a line which they could defensively hold while giving Russia the knock-out blow. Accordingly in the winter of 1916-17 the construction of the Hindenburg line was undertaken. Known to the Germans as the Siegfried line, it consisted of trenches strengthened by concrete shelters and gun emplacements, and protected by broad belts of barbed wire.

Roughly it ran from Arras to Laon, but more particularly from Tilloy-les-Mofflaines, S.E. of Arras, through Bullecourt, through Quéant, and thence west of Cambrai, St. Quentin, and La Fère to the rising ground of the Chemin des Dames. The outpost trenches were on the forward slopes, and the main positions on the reverse slopes, covered by defensive artillery fire from higher ground in the rear. Behind the first line of trenches were belts of wire arranged in criss-cross geometrical pattern, and after an interval varying from a few hundred yards to half a mile was a second trench of considerable width, intended to prevent tanks from crossing it.



Hindenburg. German battle cruiser, sister ship of the Lutzow. She was handed over to the British in 1918

The line included the dry bed of the Canal du Nord and the tunnels of the Schelde canal. Behind it was a fortified area called the Siegfried zone, while farther to the rear, covering Cambrai, were the Hunding and the Brunhilde lines, completed in 1918. To the N. from E. of Lens to Quéant was the Wotan line (*q.v.*) or "switch" covering Douai, and the Hermann line (Le Cateau to Ghent) guarding the German right flank. The names Siegfried, Wotan, and so on were taken from the Norse mythology, as interpreted to the German people by Wagner. The belief in the impregnable character of this fortified line was zealously fostered in Germany in 1917-18, to counteract the growing demoralisation of the people. It was Ludendorff's own opinion that the line could be held until the U-boat campaign had forced the Allies to sue for peace.

The result of the battle of the Somme, July-Nov., 1916, caused the Germans to retreat to the Hindenburg line, followed by the Allies. In the third battle of Arras, particularly in the fighting around Bullecourt, a considerable section of the line fell into British hands. In the first battle of Cambrai, Nov., 1917, the British approached the line but failed to shake the German hold on it. It was not until the great counter-offensive of 1918 that it was really approached and smashed. The battle of Epéhy (*q.v.*) was fought to clear the approaches to the Hindenburg line, and give the British control of important ground W. of the Canal du Nord before the main assault. In this battle the British penetrated the fortified zone to a depth of 3 m., reaching everywhere the outworks of the line itself. The second battle of Cambrai gained for the British a large system of the Hindenburg line, and its loss so greatly demoralised the German troops that Ludendorff in that month warned his govt. that an Allied break-through was possible. The Wotan line was stormed by Canadian troops on Sept. 2, 1918. See Arras, Third battle of; Epéhy, Battle of; Cambrai, Battles of.

Hinderland or **HINTERLAND**. Term generally used to denote the land behind coastal belts. It is the anglicised form of the German word *hinterland*, which probably came into general use in England in connexion with the European occupation of various parts of the W. African coast. The term is technically used in economic geography for the region or regions which lie behind a port or group

of ports through which they export the bulk of their goods and receive the greater part of their imports. Thus the Central Plain of Ireland is the hinterland of Dublin, for that port collects by rail, road, and canal the greater part of the produce exported from Central Ireland to Great Britain, while it receives and distributes the imports of the same region.

Hindhead. Eccles. and residential district, hill, and common of Surrey, England. It is on the Portsmouth Road, 2 m. N.W. of Haslemere, with which it is connected by a motor-bus service. John Tyndall called Hindhead the next best place to the Bel Alp, and



Hindhead. Stone commemorating the murder of a sailor on the Portsmouth Road in 1786

since then it has been a favourite place of residence for literary men. On Gibbet Hill, 895 ft., was the gallows on which the murderers of an unknown sailor, Sept. 24, 1786, were hanged in chains. Near by is the glen known colloquially as the Devil's Punchbowl (*q.v.*).

Excepting Leith Hill, Hindhead and its neighbour, Blackdown, 918 ft., are the highest points of the Greensand ridge, which here abuts upon the Wealden plain. The Wey rises to the S. on Blackdown, circles around Hindhead on the W. and N., and receives 8 small streams which radiate from the plateau; the most notable flows from the Devil's Punchbowl. The

Portsmouth Road runs just below the plateau edge, from which magnificent views are seen.

Hindley. Urban dist. and parish of Lancashire, England. It is 2½ m. S.E. of Wigan on the L. & Y. and G.C. Rlys. The chief industries are cotton manufactures and coal-mining. The council owns the water supply, gas, and markets. Pop. (1921) 23,574.

Hindlip. Village of Worcestershire. It is 3¼ m. from Droitwich, and here is Hindlip Hall, the seat of Lord Hindlip. In an older hall some of the conspirators of the Gunpowder Plot hid themselves. In 1886 Sir Henry Allsopp, Bart. (1811-87), the head of the firm of brewers at Burton-on-Trent, was

made a baron and took his title from here. This is still held by his descendants.

Hindmarsh. Suburb of Adelaide, capital of South Australia. It is on the Torrens 2½ m. from the city. Pop. 11,335.

Hindö. Island off the N.W. coast of Norway. The largest of the Loföden and Vesteräalen Islands, its area is

863 sq. m. Its coast-line is deeply indented by fiords and is partly wooded. Harstad is the chief of several harbours. Here are hotels, an ancient church, and a Lapp encampment. Lödingen is a fishery station and port of call on Vest fiord. Pop. 10,050.

Hindu. General name for the native, non-European inhabitants of India. In a narrower sense, the Hindus are that part of the population of Aryan origin which in prehistoric times migrated from the north-west into the Ganges district, and thence spread over the south. Their chief representatives to-day are the Brahmans and Rajputs.

HINDUISM: ITS ORIGIN AND INFLUENCE

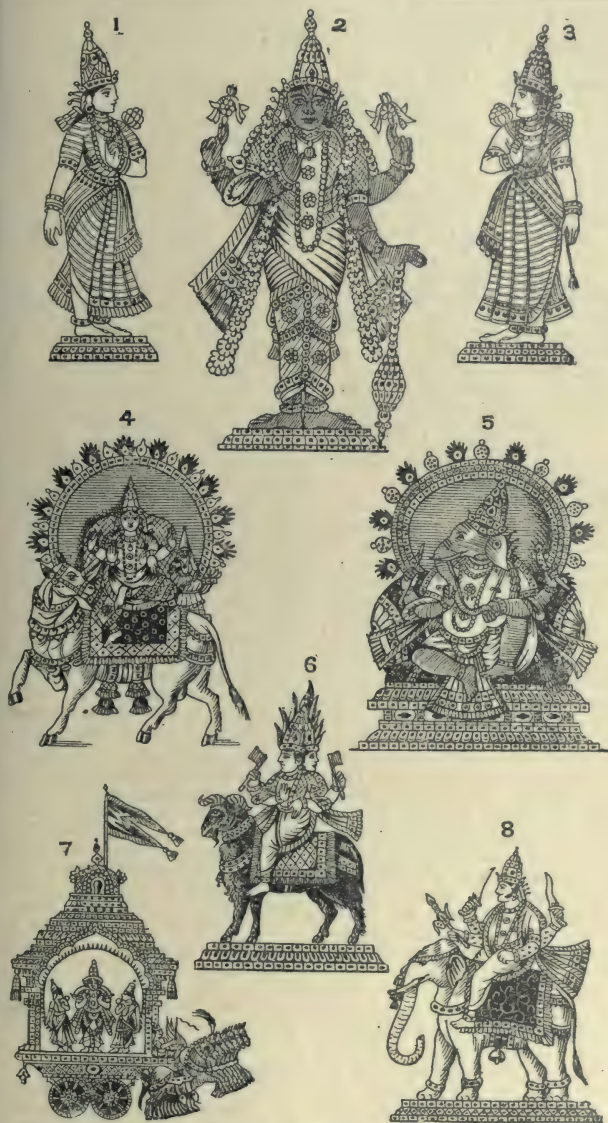
T. WITTON DAVIES, Prof., University College, Bangor

Further information about the Hindus is given in the article on India. See Brahmanism; Vedas; also Devi; Sati, and other deities; Saktas; Swaitees; Thugs

Hinduism is a term used for the new Brahmanism which came into being in India after the decline and banishment of Buddhism from that country. Modern Brahmanism, or Hinduism, is a conglomeration of original Brahmanism, of Buddhism, and of elements from other cults, especially those of the aborigines

(Dravidians, etc.). But two things remain as prominent in Hinduism as in Brahmanism—the supreme position of the Brahman, and the rigid observation of caste.

The Vedas and the Brahmanas are still regarded as the ultimate authority in religion, though the former are little read and exercise



Hinduism. Art applied to the representation of gods and goddesses. 1. Lakshmi, goddess of prosperity. 2. Vishnu, one of the principal Hindu deities. 3. Saraswati, goddess of learning. 4. Shiva the Destroyer, second of the Hindu deities. 5. Ganesha, god of success. 6. Agni, a guardian deity. 7. Surya the Sun god. 8. Indra, king of heaven.

but slight influence upon the religious beliefs and practices of the people. Even the Brahmanas are much less studied and followed than in pre-Buddhist days. Though the two great Indian epics belong in their original form to the Brahmanic age, they have been so modified and adapted to later times as to become text-books of Hinduism as well as of Brahmanism.

The Vedanta Sutras, or aphor-

isms, belong in their present form to about A.D. 700. The doctrine which they teach is the impersonal pantheism of the Upanishads. This may be regarded as the standard work of Hindu philosophy. The Eighteen Puranas (archaeological treatises) are very much read by the common people, and in particular by women. They repeat the cosmogonies of the two epic romances and give in greater

detail the mythological legends about Siva and especially Vishnu. They have much to say about the worship of these two gods and constitute the principal source and authority for modern Hinduism.

The Tantras (literally threads, then fundamental doctrines) are dependent on the Puranas, as the latter are upon the two great epics. The Tantras are manuals of religion, of magic, of counter-charms, etc., with the addition of hymns in praise of Sakti, the female counterpart of Siva. They are of late date, some no older than the 18th century. They are the product of Sivaism in its most revolting form. There exist an immense number of religious hymns called Stotras which are sung privately, in families, and by large gatherings of Hindus. These have a considerable influence upon the popular mind. The Ramayana of Tulasi Dasa in N. India in praise of Rama, belonging to the 16th century A.D., and the productions of the Tamil poet Tiruvalluvar Kurral, are widely read.

Theoretically the gods of the Vedas are those of Hinduism, but in practice Vishnu and Siva and those they represent are the only deities actually worshipped and acknowledged. Indra, the supreme god of the Vedas, receives hardly any notice, and the same is true of Agni, Varuna, Soma, and others. The Hindu Puranas recognize what is called the Trimurti, the three forms, which includes the trinity of gods, Brahma, Vishnu, and Siva. But the first, the shadowy continuation of the Vedic god of that name, is almost ignored in modern Hinduism. For an understanding of the Hinduism of to-day one has to take into account only the other two gods and the gods and goddesses who follow in their train. It is one outstanding feature of Hinduism, especially in its Sivaic section, that it invented a large number of goddesses. Vedism had hardly a place for female deities.

The predominant philosophy in Hinduism is Vedantism as represented in the Vedanta Sutras. Cultured Hindus regard all the deities of modern India, and many of them include the Gods of the Jew, the Christian, and the Moslem, as mere forms and manifestations of the Great All, the One and No Other. Among the Sivaistes, however, the dualism of the Sankhya philosophy has considerable vogue.

At least three-fourths of the population of modern India belong ostensibly to one or other of the two great sects, the Vishnuites or the Sivaistes. Though a very subordinate god in the Vedas, Vishnu

reaches the highest place among gods in the Puranas. All Vishnuites worship Vishnu or one of his ten or more incarnations. They are strongest in middle India. There are two Vighnuite sects, the Krishnaites, the most numerous though the least intellectual, who regard Krishna, and the Ramaites who regard Rama, as the principal Avatar or Incarnation of Vishnu. The Ramaites are themselves split up into two leading parties: (1) those who hold the "cat-doctrine," as it is called in the sacred books, viz. that God saves a man as a cat takes up its helpless kitten and carries it out of danger; (2) those who support the monkey-theory, that in order to be saved a man must lay hold of God as a young monkey does of its mother.

Cults of the Sivaïtes

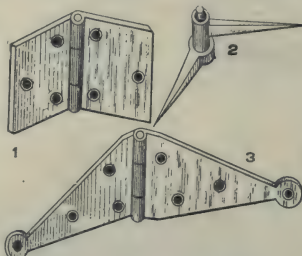
The Sivaïtes worship as their supreme deity Siva (= the propitious one), the modern representative of the Vedic Rudra, the destroyer, only that Siva is regarded as the preserver as well as the destroyer of life. The headquarters of Sivaism are the extreme north and the southern part of India. Siva's symbol is the linga (*phallus*), generally accompanied by the *yoni* and often by the figure of an elephant. These were perhaps intended originally to represent the god as the producer of the world, and in the minds of many devout Hindus no other conception is present. Siva's consorts play an important and sinister part in this cult. They are all supposed to be the one consort of Siva, under various names and with correspondingly different attributes. Thus Devi, or the Goddess; Durga, the unapproachable; Kali (*cf.* Calcutta), the black one; Gawri, the bright one; Sati, the faithful one; Parvati, the daughter of the mountain; Bhavair, the terrible one; and Karali, the horrible one.

The principal subdivisions of the Sivaïtes are the Saktas and the Thugites. The first get their name from Sakti, the female principle. In reality the Saktas worship Siva on his female side and practise indescribable obscenities as a part of their religion. Their bible is the Tantras. The Thugites profess to worship the female principle under the name Kali. Besides being guilty of the sexual obscenities of the Saktas, they make murder a part of their religion. They have, indeed, a doctrine that no blood should be shed, but parry this by throttling their victims.

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ligions of India, E. W. Hopkins, 1895; Hinduism Past and Present, J. M. Mitchell, 1897; History of Religions, Vol. I, G. F. Moore, 1914.

Hindu Kush (anc. *Paropamisus*). Extensive mountain range of Central Asia. It extends from the Pamir mountain knot in a S.W. direction, as far as lat. 34° 30' N. and long. 67° 40' E. The range lies partly in Afghanistan, and separates Badakshan on the N. from Kafiristan on the S., and has



Hinge. 1. Ordinary butt pattern. 2. Pin, hook-and-eye hinge. 3. Strap hinge

many peaks exceeding 20,000 ft., the loftiest being the Tirach Mir, 25,000 ft., dominating Chitral. The W. part of the range is not so stupendous as the N.E. and E., and the snow-line lies at 13,500 ft. It has a length of some 500 m. From Tibet to the Dorah Pass, about 200 m., it provides a practically impenetrable frontier for India. The Amu Daria has its source in these mountains, from which many tributaries of the Kabul river, the Chitral, Panjshir, etc., originate. The valleys of these streams give Kabul its strategic importance. The rocks are mainly granite, gneisses, and schists of various kinds, while sedimentary deposits indicate that the mass was upheaved in late Tertiary times.

Hindustan or **HINDOSTAN** (Pers., land of the Hindus). Name applied to the Indian peninsula, but more correctly to the Gangetic basin, and the country N. of the Vindhya Mts. See India.

Hindustani. Name given by Europeans to one of the Aryan languages of India. Its native designation is either Hindi or Urdu, the latter meaning language of the camp, so called from its having originated in the headquarters of the great Mogul near Delhi. Hindustani, which forms the general official and commercial medium of communication throughout India, contains a large admixture of Arabic and Persian words, and is rather a corrupt form of Hindi than a separate language. The literature, which in the earliest times consisted chiefly of translations from Sanskrit, Arabic, and

Persian, greatly developed during the 19th century. See The Modern Vernacular Literature of Hindustan, G. A. Grierson, 1889.

Hinganghat. Town of India, in the dist. of Wardha. It lies 21 m. S.E. of Wardha, on the Wardha-Chandari line, and is an important centre of a cotton-growing area. Pop. 12,700.

Hinge. Device consisting of plates, bars, or flaps pivoted upon pins, on which they turn relatively to each other. In ordinary types there are two flaps. Hinges are usually made of cast iron, wrought iron, steel, or brass.

The following are some of the principal patterns: butt hinges, as used for doors; rising butts, in which the two flaps bear upon each other at an angle where they hinge on the pin, so that a door to which one flap is secured rises as it opens, and its weight upon the tapered seating causes it to close automatically; tee hinge, with one long tapered flap and one short flap; box hinge, with two long tapered flaps of which one is sometimes bent at right angles; and flap bracket hinge, with three flaps and two pins at right angles to each other. One flap is screwed to a support, another to a board, and the third forms a bracket which can be hinged out sideways to support the board when hinged outwards from a wall. There are also the folding screen hinge, by means of which a screen may be folded either way; spherical gate hinge, with one long bar-flap hinging about a pin, but bearing upon a cup filled with grease or oil; and self-closing gate-hinge, with a pair of vertical pivots which serve as a bottom hinge for heavy gates. When the gate is closed, both pivots bear in sockets on the gate-post; when opened, all the pressure is sustained on one pivot only, and the bias thus set up causes the gate to close automatically.

Hingham. Parish and village of Norfolk, England. It is 6 m. W. of Wymondham. The beautiful 14th century church of S. Andrew has a noble tower, fine stained glass, and notable monuments. An ancestor of Abraham Lincoln was a native of this place. Pop. 1,380.

Hingham. Town of Massachusetts, U.S.A., in Plymouth co. A residential district and summer resort on Massachusetts Bay, it is 17 m. S.E. of Boston, and is served by the New York, New Haven, and Hartford Rly. The chief buildings are the Old Meeting House, founded 1681, Derby Academy, and a public library. Hingham was settled in 1633, and incorporated in 1635. Pop. 4,965.

Hinkson, KATHERINE TYNAN. Irish novelist and poet, better known by her pen-name of Katherine Tynan (*q.v.*).

Hinnom. Valley of Palestine, S.W. of Jerusalem. It was largely used for burning refuse, and was known as Gehenna. Much of the symbolic language of the Bible about hell has reference to this place. See Hell.

Hinojosa del Duque. Town of Spain, in Córdoba province. It is 40 m. N.W. of Córdoba, and is on the N. slopes of the Sierra Morena, in the valley of the river Zuñar. Pop. 11,000.

Hintze, ADMIRAL VON (b. 1860). German sailor and diplomatist. Entering the navy, he rose to be



Admiral von Hintze,
German sailor

full-admiral, and was a prominent supporter of Tirpitz. He was attached to Tsar Nicholas II of Russia as personal liaison diplomat between the latter and the Kaiser, and prevented any reaction on Russia's part against the Kaiser's Moroccan policy. He was appointed to a diplomatic mission to Mexico, and worked against British and American interests. Just before the Great War he was appointed German minister at Peking, where he stirred up agitation against the Allies. He was minister at Christiania in 1917-18, and succeeded von Kühlmann as foreign minister in July, 1918, resigning in Sept.

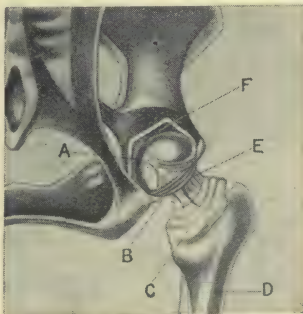
Hip-joint. Enarthrodial or ball and socket joint in the body, the ball being the rounded head of the femur, or thigh-bone, and the socket the cup-shaped hollow, or *acetabulum*, on the outer side of the pelvis. It is a very strong joint, being surrounded by tough ligaments, and it permits of a considerable range of movement of the thigh in every direction.

Dislocation of the hip-joint is sometimes congenital, *i.e.* present at birth, and may affect both limbs. The condition is frequently unnoticed until the child begins to walk, when it causes considerable deformity. The defect may sometimes be cured without an operation, the head of the femur being replaced in its socket, and the limb immobilised in plaster of Paris for two or three months. In other cases an operation is necessary. Dislocation of the hip from violence is rare, owing to the strength and security of the joint. The head of the femur may be dis-

placed from its socket either forwards or backwards; reduction is often difficult, and the movements to effect it are complex. After reduction, the legs should be kept tied together for a fortnight, and the patient should not attempt to walk for a month.

The hip-joint is not infrequently the seat of chronic tuberculosis in young children. The child complains of pain in the hip-joint or in the inner side of the knee, and may be observed to limp. There is slight wasting of the muscles of the thigh, and the affected leg appears a little longer than the sound limb. As the disease progresses, the wasting becomes greater, the pain increases, and the leg appears shortened, owing to the tilting up of the pelvis, producing a marked deformity and limp. Abscess formation is likely to occur, and the pus may burrow through the muscles, and discharge through the skin. In the advanced stage there is erosion of the head of the femur, and real, permanent shortening of the limb. The patient may develop tuberculosis in other parts of the body and die.

If the case is treated early the outlook is hopeful, though there will probably always be some crippling of the limb. In the early stages the joint should be given complete rest by keeping the child in bed, any deformity being corrected by appropriate splints or by extending the leg by weights attached to a cord carried over a pulley at the end of the bed. When the acute symptoms and pain have abated, the child is allowed to get about on crutches and a Thomas's splint, which should be worn for six months. Nourishing food and plenty of fresh air are of the greatest importance, and residence in the country or at the seaside is highly beneficial. In severe cases



Hip-joint. Anatomical diagram of the ball and socket joint. A. Ligamentum teres. B. Acetabulum ligament. C. Capsular ligament, turned back. D. Femur or thigh-bone. E. Cotyloid ligament. F. Acetabulum removed

which are not progressing favourably surgical treatment may be indicated. Other affections of the hip-joint are acute and chronic arthritis (rheumatism), and Charcot's disease, a serious disorganization of the joint which may occur in the course of syphilis. See Dislocation; Tuberculosis.

Hipparchus (fl. c. 146-126 B.C.). Greek astronomer. Born at Nicaea in Bithynia, he chiefly carried out his observations in the island of Rhodes and in Alexandria. His only extant work is a Commentary on the Phaenomena of Eudoxus and Aratus. All that is otherwise known of his numerous writings on astronomy is preserved by Ptolemy in his *Almagest* (*q.v.*). His chief title to fame rested upon his catalogue of 1,080 stars. He determined the length of the solar year with tolerable exactitude, and attempted to calculate the eccentricity of the sun's orbit. He invented trigonometry and originated the method of fixing terrestrial positions by means of circles of latitude and longitude.

Hipparion (Gr., pony). One of the fossil ancestors of the horse. Remains have been found in Upper Miocene rocks of N. America and the Pliocene deposits of Europe, Asia, and N. Africa. Smaller than the present-day horse, its average height was 4 ft. See Fossils.

Hipper, VICE-ADMIRAL VON. German sailor. Holding the rank of rear-admiral at the outbreak of the Great War, he was in charge of the German naval raid on Scarborough and the Hartlepool, Dec. 16, 1914, and commanded the cruiser squadron at the battles of the Dogger Bank, Jan. 24, 1915, and Jutland, May 31, 1916. After the latter he was awarded the order Pour le mérite by the Kaiser. Hipper was one of several German admirals whose surrender was demanded by Great Britain. See Jutland, Battle of.

Hipperholme. Urban district and village of Yorkshire (W.R.). It is 2 m. from Halifax, of which it is practically a suburb, and has a station on the L. & Y. Rly. The industries include tanning and quarrying, while in the neighbourhood are coal mines. Pop. 4,400.

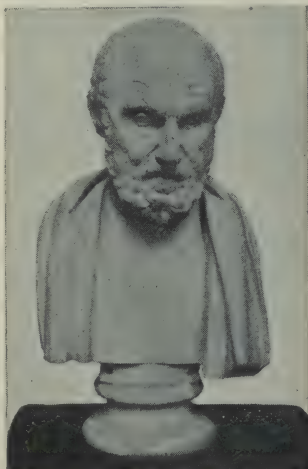
Hippias. Greek sophist. A native of Elis and contemporary of Socrates, he was famous for his extensive knowledge and remarkable memory. He regarded law as opposed to nature and driving man to act contrary to his natural instincts. He gives his name to two dialogues of Plato.

Hippias and HIPPARCHUS. Sons of Peisistratus, and tyrants of Athens. See Harmodius and Aristogiton.

Hippius, ZINAIDA (b. 1867). Russian writer of fiction. She married the novelist D. S. Merezhkovsky (q.v.).

Hippo or HIPPO REGIUS. Ancient city of N. Africa, which occupied the site of the present Bona, Algeria. Founded by the Phoenicians, it was the favourite residence of the Numidian kings. Under Rome, Hippo Regius flourished as a trading centre, and became the see of Augustine, who died here in 430. On the advent of Christianity the Roman temples, theatres, and palaces were turned into churches and monasteries. Hippo was sacked by the Vandals and utterly destroyed by the Moslems in the 7th century.

Hippocrates (c. 460-377 B.C.). Greek physician, commonly called the Father of Medicine. One of the first scientific medical men, he was born in the island of Cos, a member of the famous family of priest-physicians, the Asclepiadae (see Aesculapius). An acute and indefatigable observer, he took full advantage of the opportunity afforded him by the collocation of large numbers of patients in the



Hippocrates, Greek physician
From a bust in the British Museum

Asclepeia at Cos and Chnidos, and he ranks high in the clinical history of medicine and surgery. He had the courage of genius and, subordinating the priest to the medical man, treated disease with scientific regard of natural laws, prescribing simple remedies and recognizing the value of diet as an aid to medicine. He practised both as physician and surgeon, though his knowledge of anatomy was limited by the Greeks' objection to dissection. More than 70 of his essays are extant (Eng. trans. F. Adams, 1849). *Pron.* Hippoc-*rateez*.

Hippodrome (Gr. *hippos*, horse; *dromos*, running, course). Course for chariot or horse racing in ancient Greece. It was oblong in shape with rounded ends. In modern terminology the word, regardless of etymological associations, has come to be frequently applied to a theatre giving a variety entertainment. *See* Amphitheatre; Circus.

Hippodrome, THE LONDON. Variety house in Cranbourne Street, W.C. Designed by Frank Matcham, it was built in 1899 with special arrangements for converting the stage into a circus arena, or a large water tank. It was opened by H. E. Moss in 1900. It was reconstructed in 1909, its former arrangements being modified.

Hippogriff. Fabulous animal, half horse and half griffon. The name is sometimes applied to a winged horse.

Hippolytē. In Greek legend, queen of the Amazons. She wore a famous girdle, the gift of her father Arēs, to obtain which was one of the twelve labours of Hercules. Refusing to give it up, she was slain by him. According to another legend, Hippolytē invaded Attica at the head of her Amazons, but was defeated by Theseus and became his wife. *Pron.* Hip-*poli-tee*.

Hippolytus. In Greek legend, son of Theseus. He rejected the advances of his stepmother, Phaedra, who thereupon took her own life, leaving behind a letter to Theseus in which she accused Hippolytus as the offender. Theseus, in his anger, called upon Poseidon to destroy his son, whereupon the god sent a sea-monster which frightened the horses of Hippolytus, who was thrown out and killed. He was restored to life by Aesculapius and afterwards ruled, under the name of Virbius, in the grove of Egeria near Aricia. The tragedy is the subject of Euripides' drama Hippolytus and of Racine's Phèdre. *See* Phaedra.

Hippolytus, ROMANUS (d. c. A.D. 240). Eccles. writer who is said to have been bishop of the Port of Rome. He was a pupil of Irenaeus and was active in the times of the popes Zephyrinus (202-218) and Callistus (218-223). He wrote in Greek, and is regarded as the author of a work entitled *Philosophoumena*; or, *Refutation of all Heresies*, once attributed to Origen, and aimed especially at the Gnostics. On a marble statue, unearthed at Pontus in 1551, and supposed to represent Hippolytus, was found engraved a list of his works, including the *Philosophoumena*, part of the MS. of which was found at Mount



Hippogriff, a fabulous animal

Athos in 1842, and published in England in 1851. *See* Hippolytus and Callistus, J. J. I. Dollinger, 1853, Eng. trans. 1876.

Hippolytus, CANONS OF. Thirty-eight rules or orders attributed to Hippolytus, bishop of Rome. Existing only in an Arabic translation from a Coptic version of the original Greek, they are valuable for the sidelights they throw on the early life of the Christian Church.

Hipponax (6th century B.C.). Greek iambic poet. A native of Ephesus, he was expelled thence and settled at Clazomenae. Caricatured for his ugliness and deformity, he avenged himself by bitter lampoons. He invented the choliambus, in which a spondee takes the place of an iambus in the last foot.

Hippophagy (Gr. *hippos*, horse; *phagein*, to eat). Practice of eating horseflesh. An enormous mass of fossil bones found at Solutré in the Rhône valley supports the view that in palaeolithic Europe the wild horse was habitually hunted for food before its domestication for riding and traction. The hippophagy of ancient Scythian nomads still survives in central Asia. The practice is also recorded of early Norsemen, and in recent times horseflesh appeared in the dietary of Danish prisons. In the 8th century Pope Gregory III declared it to be unclean and execrable for human food. The general repugnance of Christendom to this food, like that of Jews to pork, is due in part to considerations rooted in primitive philosophy. During the reign of terror, in 1793, horseflesh was eaten in Paris, and in Napoleon's retreat from Moscow, in 1812, was made into invalid soup. Some French regiments, in the Crimean campaign of 1855, preserved their health by its use.

In 1845 the sale of horseflesh was authorised in Munich, and by 1855 had reached all German

states. In 1847 Isidore Geoffroy Saint-Hilaire gave a series of hippopotagous banquets in Paris to popularise horseflesh, and in 1866 its sale was regularised in that city. During the siege of Paris in 1870-71, and throughout the Great War, horseflesh was of great dietetic importance. It is regularly sold in Belgium, and is a primary ingredient in some forms of French sausage.

In 1868 horseflesh was served at a dinner given at the Langham Hotel, London, the 150 guests including Sir Henry Thompson and Sir John Lubbock. The Sale of Horseflesh, etc., Regulation Act, 1889, provides a penalty of £20 for supplying it for human food without disclosure, and also for selling, offering, or exposing it except in a place bearing a conspicuous indication that horseflesh is sold there. See Horse.

Hippopotamus (Gr. *hippopotamos*, river-horse). Large herbivorous mammal of the family *Hippopotamidae*, related to the *Suidae*, which comprises pigs and peccaries. There are two species, both confined to the tropical region of Africa. The body is bulky and piglike in form, with an exceptionally large head and gaping mouth armed with large tusks and incisor teeth. The lower pair of incisors projects almost straight forward. The nostrils are on the top of the muzzle, and the animal can raise them and its eyes above the surface of the water while nearly all the rest of the head is immersed. Both nostrils and ears can be closed when under water. The thick skin is naked with the exception of bristles on the muzzle, head, and neck, and at the end of the short tail.

The common hippopotamus (*H. amphibius*) is the largest of land mammals except the elephant. It attains a length of 14 ft., and the height at the shoulder is about 4 ft. A fine male will weigh from four to five tons. The skin is blackish brown or slate colour, but white and mottled examples have been seen. Its range is now confined to Central Africa, though it formerly occurred from Lower Egypt to Cape Colony. The Biblical Behemoth is generally identified with it. In the Pleistocene period it occurred in England, being found as far N. as Yorkshire, and it is curious that its remains have been found with those of the reindeer, which is now an Arctic animal.

In habits the hippopotamus is the most aquatic of all the larger land mammals. It sleeps beneath the surface of the water, rising to breathe every four or five minutes, but can remain entirely submerged

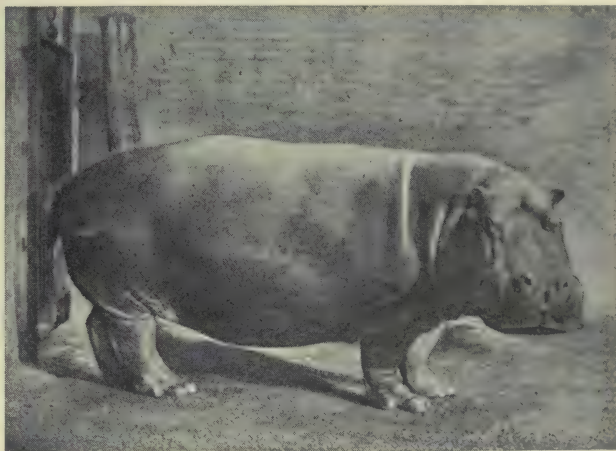
for ten minutes if pressed by hunters. Slow and clumsy on land, it is a fairly rapid swimmer. It leaves the rivers at night to graze, and in cultivated districts does a vast amount of damage to the crops. It is timid and inoffensive unless cornered, when it becomes a dangerous opponent. It has been known to live in captivity for about 30 years, and in a natural state it probably lives for a much longer period.

Economically the hippopotamus is of some value. Its hide is used for making whips and occasionally for walking sticks and umbrella handles, and also for facing polishing wheels. The tusks furnish ivory, and were formerly the substance of which artificial teeth were made. The flesh is excellent eating, and a fine animal will furnish about 200 lb. of useful fat.

The smaller species (*H. liberiensis*) is known as the pigmy hippo-

Hippurites (Gr. *hippos*, horse; *ourra*, tail). Group of extinct molluscs found in Cretaceous strata in the Mediterranean area. They are remarkable for one large, usually conical or cup-shaped shell, and a smaller one which served as a cover. Fossil shells often reach three feet in length. They are found in W. and E. Alps, Dalmatia, Greece, and W. Asia.

Hirado or **FIRANDO**. Island of Japan, off the N.W. coast of Kyushu. It is 55 m. N.N.W. of Nagasaki and is 19 m. in length. Hilly in character, its chief town, Hirado, a celebrated whaling station, lies on its E. shore. The island has long been celebrated for its blue and white porcelain. It was first visited by the Portuguese in the 16th century, followed by Dutch and English navigators early in the 17th. The Dutch established the first trading station in Japan for the use of foreigners at



Hippopotamus, the great river hog of Central Africa
Gambier Bolton, F.Z.S.

potamus, and is found in Liberia, the Guinea Coast, and Sierra Leone. It is black in colour, about 6 ft. long, and weighs about 400 lb. Its head is smaller in proportion than in the common hippopotamus, and there are only two incisors in the lower jaw. Little is known of its habits, but it appears to feed by day, is never found in companies like the larger species, and is much less amphibious in habit. See Animal.

Hippuric Acid ($C_9H_9NO_3$). Crystalline substance, contained in the urine of horses and cows. The chemical name is benzamido-acetic acid. On heating with strong acids or alkalis it decomposes into benzoic acid and glycolic acid. The crystals are colourless, and easily soluble in hot water.

Hirado in 1610; in 1710 this was transferred to Dejima, a small island near Nagasaki. Pop. 35,000.

Hiramo Maru. Japanese liner. She was torpedoed and sunk by the Germans off the Irish coast, Oct. 4, 1918, with a loss of 292 lives. Of these it is estimated that 100 were lost as a result of the U-boat which sank the Hiram Maru trying to torpedo the U.S. destroyer Steret while the latter was engaged picking up survivors, compelling her to cease her rescue work while driving the submarine away.

Hiranyagarbha. Deity of the ancient Hindu pantheon. In the oldest of the Hindu sacred writings, the Rig-Veda, he is represented as the upholder of heaven and earth, and the giver of life and breath. See Hinduism; Rig-Veda.

Hire Purchase System. Method of purchasing goods by instalments. It is largely used by persons of moderate means wishing to obtain immediate possession of expensive articles such as pianos, suites of furniture, bicycles, or sewing machines. There is almost always an agreement in writing between the parties; a special condition being that if any instalment becomes in arrear, the vendor may recover his property and all previous instalments are forfeited. For this purpose the document, though really an agreement to purchase, is drawn as one to let and hire. The instalments are treated as payments for the hire of the goods, which remain the lender's property; but with a proviso that if all instalments are punctually paid, the ownership passes to the hirer. Meantime the latter has no right to dispose of the property, or to put it under pledge.

Hirosaki. City of Honshu, Japan, in the province of Mutsu. It stands in the Tsugaru plain near a range of hills, 20 m. by rly. S.S.W. of Aomori. It has castle ruins and a museum. On the W. of the town is the solitary cone of Iwakisan, 4,650 ft., which forms a prominent landmark. Hirosaki is noted for its apples and silk, and the inhabitants are expert in the manufacture of fine lacquer ware. An important and picturesque town, it is the headquarters of a high court. Pop. 34,900.

Hirosage, MOTONAGA (1797-1858). Japanese genre and landscape painter. He studied under Riansai Okajima and Toyoturo Ontagawa. His somewhat rare paintings and colour prints of Japanese landscape are of high artistic value. He died at Yeddo. The Melbourne Gallery, Australia, possesses a snow scene by him.

Hirosshima. City of Honshu, Japan, in the prefecture of Hirosshima. It is picturesquely situated at the head of a bay, on the S. coast of the island, 190 m. W.S.W. of Kobe, on the rly. between that city and Shimonoseki. Facing the city is the sacred islet of Itsukushima, famous for its beautiful Shinto temple, a resort of thousands of pilgrims to whom the island is known as the Island of Light.

In the city itself there are many temples and shrines, a recreation ground, and numerous tea-houses. Commercially important, Hirosshima carries on a brisk trade in lacquered ware, bronze goods, and objects of art, being the largest depot for the surrounding district on the Inland Sea. Ujina, 4 m. away, is a busy port for steamers in the Inland Sea and Formosa



Hirosshima, Japan. Wharves and river craft at the head of the bay

trade, and, since 1894, an important transport base in time of war. Pop. 167,400.

Hirsch, MAURICE, BARON DE (1831-96). Jewish financier and philanthropist. He was born at



Maurice Hirsch
(Maurice Hirsch)

Munich, Dec. 9, 1831, his father and grandfather having been bankers to the Bavarian court. Having made an enormous fortune by obtaining concessions from the Ottoman government for the construction of the Balkan railways, he became an Austrian subject, and bought a magnificent estate at Ogyalla in Hungary. He took an active interest in the Turf, his filly La Flèche winning the Oaks, the St. Leger, and the Thousand Guineas in 1892. He contributed more than £2,000,000 to a society for settling Russian Jews in the Argentine and in Canada, and did much in other directions to help distressed members of his race. He died April 21, 1896.

Hirschberg. Town of Germany, in Silesia. It lies 30 m. S.W. of Liegnitz, at the junction of the Zaacken and the Bober, between the Katzbach Mts. and the Riesen Gebirge. It contains two Gothic churches (Protestant and Roman Catholic) and an arcaded market place. The town is a starting-point for excursions to the Riesen Gebirge, and is a trade centre, with manufactures of linen, machine shops, etc. Pop. 20,561. Another Hirschberg is on the Saale, about 14 m. W.S.W. of Plauen.

Hirschfeld, GEORG (b. 1873). German novelist. Born in Berlin, Nov. 11, 1873, he came under the influence of Gerhart Hauptmann, and at the age of twenty took up

literature. In 1895 he produced Dämon Kleist, followed by several plays, one of which, Die Mütter, had a successful run in 1896. His best known works were Freundschaft, 1902; Das grüne Band, 1905; Das Mädchen von Lille, 1907; Onkel und Tante Vantee, 1913.

Hirson. Town of France, in the dept. of Aisne. It is on the R. Oise, 11 m. N.E. of Vervins and 34 m. E. of St. Quentin. A factory town, it is an important railway junction, where five double-track lines meet. It had a fort equipped with a disappearing turret, but everything there was in lamentable disrepair in Aug., 1914. The garrison consisted of 500 hastily mobilised territorials. In face of the German advance after Charleroi it was evacuated by the French on Sept. 1 and was occupied by Germans. On Nov. 10, 1918, it was captured by the French. Pop. 9,000. See Valenciennes.

Hirst, GEORGE HERBERT (b. 1871). English cricketer. Born Sept. 7, 1871, at Kirkheaton, he became a member of the Yorkshire county eleven in 1892. He was a fine batsman, and a fast left-hand bowler, with a most deceptive swerve. His best batting season was 1904, when he scored 2,501 runs for an average of 54.36 per innings, and his best bowling season was 1906, when he took 208 wickets for an average of 16.5.

George Hirst
English cricketer

He has scored 1,000 runs and taken 100 wickets on 14 occasions, and in 1906 he scored 2,000 runs and captured 200 wickets. Altogether he played 60 innings of 100 and upwards. In 1920 he became cricket coach at Eton.

Hirtius, AULUS (d. 43 B.C.). One of the lieutenants of Julius Caesar in Gaul. The authorship of

an eighth book on the Gallic War and of a history of Caesar's Alexandrian war is generally attributed to him. In 43, he and Pansa, his colleague in the consulship, were sent to relieve Mutina (Modena), then besieged by Antony. The latter was defeated, but both consuls lost their lives.

His House in Order. Comedy written by A. W. Pinero and produced Feb. 1, 1906, at The St. James's, where it ran for 430 performances. Irene Vanbrugh and George Alexander played the leading parts.

His Majesty's Theatre. London theatre, in the Haymarket (*q.v.*). In the first building erected on the site, opened as the Queen's Opera House in 1705, the first performance of Handel's *Rinaldo* took place in 1711. The building having been burnt down, a new one was erected in 1791, and named the King's Theatre. Here Don Giovanni was produced for the first time in England in 1817. On the accession of Queen Victoria the name of Her Majesty's Theatre was given to the building, which regained popularity in 1847 with the debut of Jenny Lind.

The days of Titiens, Trebelli, and Nilsson followed from 1862 to 1867, when the theatre was burnt to the ground. Rebuilt, it stood empty till Moody and Sankey filled it with their Revivalist services. The present theatre, built of Portland stone and red granite, was designed by C. J. Phipps for Beerbohm Tree in 1897. On the accession of Edward VII its title was changed to His Majesty's Theatre.

Hissar. Pass and glacier in the Karakoram Mts., Central Asia, N. of Baltistan, Little Tibet. It reaches an alt. of 17,650 ft., and was first explored in 1892 by Sir W. Martin Conway.

Hissar. District, subdivision, and town of India. In the Delhi Division, Punjab, its area is 5,217 sq. m., about four-fifths of which is under cultivation, the chief crops being millet, barley, and wheat. The rainfall is about 15 ins. Irrigation from the Sirhind and Western Jumna canals enables some crops to be grown, but the harvest is uncertain. The district contains a number of cotton ginning and pressing factories. Hissar town is of little commercial importance. Pop. district, 804,900; subdivision, 126,800; town, 17,160.

Hissar. Province and town of Turkistan, in E. Bokhara. The country is well watered and fertile, but very unhealthy in the low-lying districts. The chief products are grain, cotton, flax, and rice. The town is famous for its knives,

sword-blades, and silken wares. Hissar was formerly an independent principality. Pop. of town about 10,000.

Histology (Gr. *histos*, web; *logos*, account). Branch of science dealing with the microscopical structure of living organisms. Although histology is contemporaneous with the invention and improvement of the microscope, the study of the minute structure of

1869 to examine and report upon the historical records, manuscripts, etc., in existence in the country. It is a permanent body, the chairman being the master of the rolls, and has published a number of reports on various valuable collections of historical material, *e.g.* those at Hatfield and Dropmore. See State Papers.

Historical Method. Term used mainly in economics for a method

of inquiry that bases its results upon the facts of historical research rather than upon theories. It is the inductive as opposed to the deductive method. More narrowly it is applied to those German scholars who follow the system founded by W. Roscher. See Logic; Roscher.

Historical Society. ROYAL. British learned

society founded in 1868. Its objects are the promotion of historical study and research. Papers are read at its monthly meetings, and its Transactions are published from time to time. Its members are styled F.R.Hist.S. The offices are at South Square, Gray's Inn, London, W.C.

Historic Houses. Houses in which historic events have taken place or historic personages have lived. Examples are Burghley House, Devonshire House, Grosvenor House, Hatfield House, Holland House, Marlborough House, and Lansdowne House. These, and others, are described in this work under their respective headings.

Historiographer (Gr. *historia*, history; *graphein*, to write). Official historian. Soon after the revival of learning certain rulers and princes began to appoint scholars to write the histories of themselves and their lands. The emperor Charles V, Louis XIV, and other kings of France, for instance, had their historiographers royal, who included Racine and Voltaire, while Charles II of England appointed one on his Restoration. Obviously the work of these men, who had to write something laudatory, had little value. The most interesting of these survivals is the king's historiographer in Scotland. The office existed there before 1603, but fell into abeyance. In 1763 it was revived and William Robertson was appointed. His successors included J. H. Burton and W. F. Skene.



His Majesty's Theatre, London, built in 1897

animals and vegetables began with the discovery of blood corpuscles by Malpighi (1628-94), that of plant cells by Robert Hooke in 1667, etc. François Bichat (*q.v.*), the French physiologist, first laid the foundations of histology in his great work, *Anatomie Générale Appliquée à la Physiologie et à la Médecine*, 1801-12, where he showed the intimate connexion between heart, brain, and lungs, and classified tissues according to their structures.

Hugo von Mohl, Schleiden, and Schwann marked another great step in the science of histology by the discovery of the cellular structure of plants, the latter showing that animal and vegetable tissues all develop from cells. The study of cellular structure by Johannes Müller, Virchow, and others since has given an immense impetus to the investigation of diseased growths. See Biology; Cell; Physiology; Tissue.

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Histon. Parish and village of Cambridgeshire, England. It is 4 m. N.N.W. of Cambridge on the G.E.R. The cultivation of fruit and jam manufacture are the chief industries. Pop. 1,385.

Historical Manuscripts Commission. In the United Kingdom, a royal commission appointed in

HISTORY: THE STUDY OF THE PAST

A. D. Innes, M.A., Author of *A History of the British Nation*

This article describes the main principles which underlie the study of history, on which subject there are hundreds of articles in this Encyclopedia. These articles include histories of all the nations of the world, both past and present, sketches of Feudalism, the Reformation, and other intellectual and economic movements, and biographies of kings, soldiers, and statesmen; also historians

History is concerned with the inception, progress or decay of organized communities, the movements, the events, and the personalities connected therewith. In the literary sense of the term, it is the written or pictured record of that process of development. In the scientific sense it is the accumulation and investigation of the data provided by the past for the science of politics, with which every citizen is vitally concerned in a country where every citizen has a share, however small, in controlling the government of the State, a periodical duty of pronouncing his own judgement upon political questions, and a definite responsibility towards the State of which he is a member. History is the gathered experience of the past in relation to social and political organization, and so for all responsible citizens it is a study of the most serious practical importance.

Education in Citizenship

The functions of the historian are threefold—to ascertain and accumulate facts; to coordinate and relate them in true perspective; and to indicate and test the generalisations which may be inferred; to which may be added the fourth function, that of artistic presentation. For the ordinary citizen cannot himself be a historian; it is from the historians, not from his own researches, that he must derive his knowledge of history; and it is absolutely certain that the historians from whom he will derive it will be those who present it in a manner which appeals effectively to the imagination of the student. It is improbable that any historians, however learned, will ever succeed in displacing the conceptions of historic figures created by the plays of Shakespeare, or the novels of Walter Scott and others, in spite of the knowledge that such works made no profession of historical accuracy; and while nine educated persons out of ten are aware that Macaulay, Carlyle, and Froude are denounced as misleading, the majority will prove in effect to be their more or less unconscious disciples.

The study of history provides us with actual precedents, and the data for principles to be applied to present-day problems, though it is necessary to bear in mind the para-

dox that, although "history repeats itself" perpetually, it may be said with equal truth that it never repeats itself. The events of the past manifestly have a bearing upon the present, but there is always a danger of forgetting that the nature of a problem may be entirely changed by quite unobtrusive variations in circumstances. Throughout the Great War the best possible antidote alike to a shallow optimism and an egregious pessimism was a tolerably intimate acquaintance with the history of the wars of 1792-1815, and in a less degree those from 1739-63. But pessimism was absurdly fostered by the drawing of entirely misleading comparisons between conditions from time to time prevailing in the Great War, and in one or other of those wars; optimism was fostered rather by the failure to note real analogies than by dwelling upon analogies that were misleading.

On the other hand, it is a matter of common knowledge that the minds of the German people were prepared for the war, educated up to it—the intellectual soil was fertilised—by professorial misrepresentations of history, accepted as gospel, which taught them to believe that the craft which keeps no faith and the force which knows no mercy are the sure instruments of victory, and the only instruments by which victory has been or can be achieved. To their total misreading of history—Roman as well as British, it may be remarked incidentally—the Germans owed the conviction, doomed to so painful a disappointment, that the British Empire was a feeble tyranny, created and maintained only by violence and fraud—especially fraud—which would be shattered as soon as the populations were given an opportunity for bursting their fetters. To this poison the true antidote would have been found in an intelligent study and a true representation of history.

History and Practical Politics

There can be equally little doubt that Europe in general, and Great Britain in particular, would have been much better prepared for the war, or at least for the character which it assumed, but for the misreading of history, which overlooked the phenomenon known as

reversion to type, and if it had also been realized that the history of other countries than our own demands careful and unprejudiced attention. That error the Germans avoided in part; they gave the attention, but in a spirit so prejudiced that the result was almost more misleading than inattention would have been.

It may be confidently assumed that the Great War will generate a vast amount of historical reading and historical writing; that what has been written in the past will be reviewed in the light of these portentous events; that it will become at least the primary function of education in history to apply it to a right understanding of other nations. And there will be a development of the tendency, which has made its way so slowly, to dwell upon history less in what may be called its antiquarian aspects, and more as a subject practically and intimately associated with the functions of citizenship. Perhaps the danger is that educationists may be tempted to a too violent reversal, and will neglect the past which makes the recent intelligible.

History and Education

To the youthful mind the practical problems of citizenship, most of the political side of history, are not easily made intelligible and interesting, but youth is susceptible to the inspiration of high enthusiasms, noble ideals, chivalrous sympathies, heroic deeds. For the formation of character, nothing is more essential than to foster such susceptibilities, to train the mind of the child to admire rightly noble men, noble women, and noble deeds, to hate foul deeds and their doers. And therewith it is essential to instil the sense of justice. To this end history rightly handled is an incomparable medium. Every boy or girl is the better for learning to conceive an enthusiastic admiration for Leonidas, Regulus, Robert Bruce, Joan of Arc, or Sir Philip Sidney; the better for learning to be just to Cromwell or Edward I. When the study of history becomes a search for unprejudiced historic truth, there is no finer moral training.

History in the literary sense came actually into being when men began to concern themselves not merely with recording contemporary events, but also with comparing and coordinating, however uncritically, such records as had survived from the past, whether graven, or written, or through oral tradition. The earliest historical literature we possess is that of the Hebrew Scriptures, and it is at least tolerably certain that, in the

form in which we have them, they are derived in part from documents which must have been in existence some fifteen hundred years before the Christian era. In this sense they are the earliest consecutive narrative consciously constructed as a story of the development of an organized community. The things elsewhere written or depicted at an earlier date were either symbolical or were presentations of contemporary episodes, or were not made with the intention of recording events, though of great value to students endeavouring to reconstruct the past. Such were the legal code of Hammurabi, king of Babylon, the Amraphel of whom we read in the book of Genesis as the contemporary of Abraham, diplomatic correspondence like the Tell el-Amarna Letters, discovered in Egypt in 1888, and various other documents and monuments.

In the 7th and 6th centuries, Babylonia and Assyria began to produce official annalists. In Egypt, too, the priestly caste had preserved historical records from which a scanty information was presently to be derived by lay inquirers. In the remote East, the Chinese, a very advanced people, compiled their own records, as also did the Aryan invaders of India. But it was in the 5th century B.C., when Greek literature burst into full blossom, that history permanently established itself as a branch of literary art and of political science. Apart from the Hebrew chronicles, the world before the 5th century provided materials for historical investigation, but it did not provide historians.

The historian first reveals himself in literature as the child of the epic poet. He is a man with a great story to tell, a drama vivid with human life, only his medium is not verse but prose; and, whereas to the poet it is a matter of indifference whether things actually happened as he relates them, whether his story is fact or fiction, or blend of fact with fiction, the historian intends his story to be one of actual fact duly verified. As with the epic poet, his work must be on the heroic side, but his characters are real, not imaginary kings, captains and statesmen, leaders of men.

The Father of History

So it was with the Hebrew chroniclers; so it was with the Greek Herodotus, who is called "the Father of history," who told the immortal story of the mighty contest wherein Greece in the days of her glory did battle for the cause of freedom and rolled back the flood of Orientalism. Incidentally

he collected and set forth much information, not without a legendary element, concerning the rise of the Persian empire and the antiquities of Egypt. A generation later the scientific element was introduced by Thucydides, who chose for his theme contemporary history—the struggle for supremacy between the two leading States of the Hellenic world, wherein he himself played a minor part. It might be said that Herodotus and Thucydides, two of the greatest among all literary artists, set between them the models which have been followed by all the great literary historians, from Livy and Tacitus through Froissart to Hume and Gibbon, Macaulay, Carlyle, and Mommsen. The extraordinary merits of Thucydides have given to his subject, the contest between Athens and Sparta, a historical prominence out of proportion to its intrinsic importance, by reason of the masterly treatment it received, which enhances its interest to the student of political science.

From the time of Thucydides onwards there was among the Greeks no lack of historians, though none can be named as of the first rank; their work is for the most part valuable only so far as it relates to contemporary events. They provide the modern inquirer with little more than outlines to be filled in from other sources, such as the recorded speeches of political orators or the discussions of political theory by philosophers.

The Roman Era

Historical writing again comes to the forefront in the great literary era of Rome, which begins in the days of Julius Caesar and ends some century and a half after his death. Caesar himself appears as a historian in the record of his campaigns in Gaul. Livy, in a brilliant narrative, relates all that either traditions or authoritative records have to tell of Rome's past. Tacitus gives a masterly though extremely biased picture of political conditions, persons, and events at the moment when Republican Rome had transformed itself into Imperial Rome. And still the modern investigator finds even more guidance in the works of men of letters who were not professed historians, in the satires of the poets, and in the semi-philosophical discourses, the public orations, and the private epistles of Cicero, while the art of historical portraiture was perfected by the pen of Plutarch.

The age of the Antonines, great in many ways, was unproductive. An intellectual stupor took possession of the Roman Empire; in the west

it was overwhelmed by the barbarian flood, against which in the east it maintained only a precarious existence. The records of the early Middle Ages were compiled mainly in the extremely uncritical and secluded atmosphere of the cloister. Though literature was smothered in the outer turmoil, in the cloister records were preserved, such as the Anglo-Saxon Chronicle. Apart from the official chroniclers of contemporary events, although so-called histories were written, little serious attempt was made to distinguish between fact and fiction; picturesque legend absolutely incredible was allowed to pass for history at least as concerned the past. But in the 13th century a new literary era was dawning; in the 14th it had dawned. The art of writing contemporary history revived with Froissart, though to him it was still only the painting of its gorgeous pageantry.

Froissart and Raleigh

With the sixteenth century, the revival of letters, already active in Italy for two centuries, but only sporadic elsewhere, expanded all over western Europe at the moment when letters had been finally extirpated in the east. Thenceforth the recording of contemporary history became general; later medieval history was treated in the spirit of Froissart, and what may be called the authorised histories of Greece and Rome were studied as a necessary part of polite culture, the outcome of the discovery of the classical literature of Rome and Greece. At the same time history again began to be treated as a branch of political science, the Florentine Machiavelli leading the way.

From the beginning of the sixteenth century, then, there is an abundance of literary records ready to the hand of the modern inquirer. Through the Tudor period vigorous and picturesque narrative is characteristic of the English and Scottish writers, whether they are dealing trenchantly with the story of the Reformation, like John Knox, or Foxe in the Book of Martyrs, or telling the sagas of the Elizabethan seamen, as in Hakluyt's Voyages and the soul-stirring narratives of Sir Walter Raleigh. Raleigh travelled into a still more remote past; for when he lay a prisoner in the Tower he set about writing a History of the World, which Oliver Cromwell ranked next to his Bible. We do not now read Raleigh's History of the World, any more than we use Elizabethan maps for the study of geography. Its value as conveying a knowledge of

the past is nil. But in this particular case the value lies not so much in the narrative as in the commentary—the commentary of one of the most brilliant intellects of the most brilliant epoch of English literature. Of another type altogether in the historical field were the researches of John Stowe, who unearthed the works of those medieval chroniclers who provide us with the real groundwork of our knowledge of the Plantagenet era—Matthew Paris, Thomas of Walsingham, the so-called Matthew of Westminster, and others.

The 17th century begins to provide us with what grew into an increasing stream of literary works which are not in form histories but memoirs invaluable to the historian, of which an admirable example is Lucy Hutchinson's *Life of her husband, the Puritan colonel*, together with the immortal diaries of Samuel Pepys and John Evelyn, none of them works written for publication. But it gives us also two great works of contemporary historians, *The History of the Great Rebellion*, by Lord Clarendon, and *The History of My Own Time*, by Gilbert Burnet, who was also the author of a *History of the Reformation in England*. Clarendon's work at least remains a literary classic. Everywhere, however, the historians continued to devote themselves entirely to the modern era until the 18th century was far advanced, whilst in France Saint-Simon was writing the incomparable *Memoirs*, which were not published till the 19th century, and Voltaire was producing his brilliant pictures of Charles XII and Peter the Great, and of the Ages of Louis XIV and Louis XV, more with an eye to literary effect than to the pursuit of exact historic truth.

Widening Scope of Historians

But with the second half of the 18th century a reaction was setting in against the convention set in France which may be said to have recognized only two eras as of real importance in the history of the world—the Augustan Age of Rome and the Bourbon Age of Europe. From Scotland, Hume produced the first great *History of England*, and Robertson the first great *History of Scotland*; and in his Charles V Robertson gave something like an appreciation of the Middle Ages.

Already in France Montesquieu, not writing history in the technical sense, had developed the principle of examining political institutions in the light of the history of their growth and development, and their relation to institutions in other countries and other ages; and

Burke, as a statesman, was insisting upon a corresponding theme. Then came again from Britain two monumental works—Adam Smith's *The Wealth of Nations*, which developed the relation between the scientific studies of history and of economics, and the work which is perhaps the greatest of all histories, Gibbon's *Decline and Fall of the Roman Empire*.

The Greatness of Gibbon

This, at least, is to be said of Gibbon, that, like Thucydides, he can never be superseded; all other work covering the ground will be in the nature of a commentary on Gibbon, however much those particular commentaries may compel us to revise particular judgements of the great man, or newly co-ordinated data may correct misapprehensions of fact which it was impossible for him to avoid. And his achievement was the more tremendous because, unlike Thucydides, he wrote not of what he had seen and heard with his own eyes and ears in one small corner of the world during a single lifetime, but of the long-past history of half the civilized world during a period of a thousand years.

Gibbon, in fact, gave a new meaning to the name of historian; and his work was hardly finished when the cataclysm of the French Revolution and the wars which followed upon it gave a new import to history, as again a new import has been given to it by the cataclysm which the German Kaiser invoked in 1914. It forced upon the world the consciousness, hitherto only academically suggested, of the unity of the present with the past, of the impossibility of isolating a single stage of development from all that has gone before, and treating the present as the final consummation of a past which might be ignored.

The 19th century witnessed first the further revival of that interest in the past the beginnings of which we have noted as preceding the revolution, the interest especially in medievalism which is associated with the whole movement known as Romanticism. Next, the labours of Niebuhr gave a new vitality to the story of Ancient Rome—one which is of the most profound interest to the British race, the creators of an empire to which none save that of Rome offers an approximate analogy. On the renewed study of Roman history as a subject of vivid living interest followed a like revival of the study of the States of ancient Greece; and from the study of Greece the new spirit of inquiry extended itself to the yet more ancient empires of the East,

the excavation and interpretation of ancient monuments which at last began to reveal the secrets that had been hidden for more than 3,000 years. Nor did the movement end here, but carried itself into investigations of primitive social conditions—so primitive that when they existed no conscious records of them were made. History, in short, in one of its aspects became a reconstruction of the only half-realized structures of the remote past, and also a detailed examination of origins. It was no longer a picturing of the full-grown plant in full leaf, but an inquiry into its organic life.

Growth of Specialism

The value of such work is not to be underrated. In the latter half especially of the nineteenth century it had absorbed the attention of the enormous majority of historical students, who became specialists in some very narrowly circumscribed patch of historical inquiry, sometimes with very valuable results, though, also, not without the disastrous consequences which sometimes attend specialism, from the exaggerated importance attached by the individual inquirer to his own particular field of inquiry. It is perhaps the side on which the Germans can most definitely claim to have excelled others, if not in the sifting and co-ordination, yet at least in the accumulation of data. Yet even on their own ground they have not surpassed such scholars as Bishop Stubbs, or F. W. Maitland, or Sir Paul Vinogradoff, names perhaps more honoured by students than by the general public.

Nevertheless, though the disciples of this school are perhaps somewhat apt to arrogate to themselves an exclusive right to the title of historian, it is not with such work that history is exclusively concerned. History is matter not only for the laboratory student but, as we have insisted, for all citizens; and the public is very much less concerned with the data than with the conclusions to be drawn from them. The task of exposition belongs no less to the historian, though the only safe exponent is he who is sure of his data. The literature of the nineteenth century is crowded with the names of brilliant exponents, from those who have taken all historical knowledge to be their province, such as Buckle, whose work on *The History of Civilization* was merely conceived as an introduction to the subject, to men whose real work was concentrated upon a particular period, such as Macaulay or Froude.

Macaulay made it definitely his business to write history in such a manner that its interest might appeal with no less attraction than pure, unqualified fiction to ordinary men and women. He did so by making it a picture of a live world full of live people, generally either very good or very wicked. Incidentally, he made his presentation of history a medium for teaching his own political doctrines, not without much collecting and sifting of evidence, but with a firm conviction that such evidence as told against his preconceptions came from tainted sources, while anything that told in favour of them required no further guarantee for its veracity. Very much the same might be said of Froude. Of a different school were Hallam and James Mill, who rejected the attitude of palpable advocacy which Froude and Macaulay made no attempt to conceal, and assumed an air of rigid philosophic impartiality which veiled an equally firm determination to impose their own predilections upon their readers. An artist of a different type was J. R. Green, who was concerned with the atmosphere rather than the drama of history, with the landscape, the setting, more than with the portraits.

Carlyle's Hero Theory

On the other hand, the theory of history which treats it as pivoting upon great personalities, the old principle of portraiture, found the mightiest of all its exponents in Thomas Carlyle. The doctrine which he practised with tremendous effect, not only in his *History of Frederick the Great* and *The Letters and Speeches of Oliver Cromwell*, but also in *The French Revolution*, is most explicitly set forth in *Hero-worship*. In effect, its essential premise is that what is of significance in the history of the world is the history of its great men, its heroes; coupled with the second premise that no man ever did or could achieve the heroic distinction and become one of the moulders of the destinies of mankind without the endowment of an essential sincerity—which placed him in the somewhat awkward predicament of being compelled to prove to himself the essential sincerity of Frederick the Great. But the hero-theory, intensely inspiring so long as it insists upon righteousness, sincerity, justice, as essential qualities of the hero, who, lacking them, is at best a Titan, becomes a mere impulse to Titanism if the need of those qualities be not recognized, and when the one demanded is intellectual forcefulness, the blunder into which German

exponents of the theory, Mommsen, Treitschke, and others, were betrayed with disastrous results.

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Hit. Town of Mesopotamia. It stands on the Euphrates, 140 m. N.W. of Hilla and 33 m. N. of Ramadie. Anciently known as Is, and identified by some authorities with Ahava (Ezra viii, 15), it is about 85 m. N.W. of Bagdad and 70 m. W. of Tekrit, with which it is connected by a desert road. It is famous for its gardens of mulberries and peaches, and is also noted for its wells of bitumen, which the Arabs call the mouths of hell. During the Great War Hit was occupied in March, 1918, by the British in the course of the operations in Mesopotamia against the Turks. Pop. 10,000. See *Mesopotamia, Conquest of*.

Hitchin. Urban district and market town of Hertfordshire, England. It is 32 m. N. of London on the G.N.R., just off the Icknield Way (q.v.). The fine old parish church of S. Mary (formerly S. Andrew's) contains a groined roof, an ancient font, mosaics, effigies, brasses, and other features of an antiquarian interest. Near by are Golden Square, where Eugene Aram lived, and the wide thoroughfare called Bancroft. On the site of the Baptist chapel in Tilehouse Street once stood a building in which Bunyan preached. Chapman was a resident. Girton College (q.v.), established here in 1869, was removed to Cambridge in 1872. There are a corn exchange and a town hall, and the council owns the waterworks and maintains a cattle market and baths.

Hitchin was known to the Saxons as Hiche, probably from the little river Hiz, which rises in the vicinity. Edward the Confessor conferred the manor upon Harold; the present lord of the manor is the King. The Priory, a seat of the Radcliffe family, is on the site of a Carmelite monastery, and almshouses include remains of a Gilbertine nunnery. Shandy Hall, residence of the original of Sterne's Uncle Toby, has

disappeared. Hitchin is a busy agricultural centre, grows lavender and peppermint for distillation, and engages in malting and straw-plaiting. The town gives its name to a co. div. returning one member to Parliament. Market day, Tues. There are fairs at Easter and Whitsuntide. Pop. (1921) 13,535.

Hither Green. Residential district and suburb of S.E. London. It is in the met. bor. of Lewisham (q.v.), 7 m. S.E. of Charing Cross on the S.E. & C.R. Here is Park Hospital, one of the large fever hospitals of the Metropolitan Asylums Board. It overlooks Mountsfield Park, a pleasure ground of 12½ acres, opened to the public in Aug., 1905. Pop. 25,000.

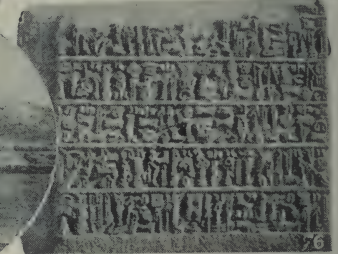
Hitopadesa. Sanskrit collection of animal stories told with moral purpose, the title signifying "salutary counsel." A popular summary of the Panchatantra, it includes many of the fables associated with the legendary Bidpai, and is supposed to have been compiled by the Brahman Vishnuserman, Eng. trans. F. Johnson, 1847. See *Panchatantra*; Sanskrit.

Hitteren. Large island on the W. coast of Norway. Situated S.W. of the entrance to the Trondhjem Fjord, it is 30 m. long and 10 m. wide, its area, including adjacent small islands, being 203 sq. m. On the S.E. coast is the port and station of Havn. The island, which contains numerous streams and lakes, is hilly, rising in parts to over 1,000 ft. Fishing is extensively carried on and deer abound. Pop. 2,000.

Hittites. Ancient people in W. Asia. The Biblical names, Heth and Hittite, denoted at first diverse racial elements in pre-Israelite Canaan and afterwards various N. Syrian tribal confederacies. They are identifiable with the Kheta of Egyptian annals and bas-reliefs, and the (K)hatti of Assyrio-Babylonian records. Denoting primarily a dominant tribe in the Halys plain, the name



Hitchin, Hertfordshire. Market square and parish church of S. Mary



Hittites. Reliefs from Carchemish, the Hittite city. 1. A warrior. 2. Winged sphinx or chimaera. 3. Warriors in procession. 4. Two winged demons. 5. The citadel mound of Carchemish from the north. 6. Hieroglyphic inscriptions. 7. Reliefs depicting family life. 8. Woman carrying a child and leading a lamb. 9. Two personages of distinction

By courtesy of the Trustees of the British Museum

sometimes embraces the confederacies of city states whereof this tribe usually formed the head.

Eastern Asia Minor was occupied in prehistoric times by agricultural slender-limbed long-heads related to the neolithic brown race of the Mediterranean region, Elam, and W. Turkistan. They were subjugated by scattered immigrant bands of sturdy, alpine round-heads from Armenia and the Caucasus, who were aided by a knowledge of implements and weapons of the early copper-age culture.

They also bred and harnessed the horse, which long afterwards was imported from them by Solomon (1 Kings 10).

Well established by the end of the 3rd millennium B.C., this early Cappadocian activity, through one of its offshoots, overturned the first dynasty of Babylon about 1925 B.C. But its efforts to secure political cohesion were impeded by the mountain barriers, while the nations around possessed the advantage of sea and river communications. The upland tribes accord-

ingly tended to segregate into independent city states. At length, about 1400, a dynasty was founded by Subbiluliuma, who welded his neighbours into a close-knit kingdom, organized into princedoms and prefectures, wherein women were accorded official rank. This kingdom reduced the Mitannian kingdom in N. Mesopotamia to a protectorate, held Kadesh as a frontier-outpost, made treaties on equal terms with Egypt, maintained relations with Babylon, and lasted until overthrown in 1200

by the Mushki. For a time Hittite lands played an unimportant rôle, but by 1000 their activities revived under the spur of an early iron-age culture until Carchemish, in 717, and Marash in 709, were overthrown. This later period is preferably called post-Hittite.

The recognition of a distinctive sculptural art at Hamath, Marash, and elsewhere led Sayce, in 1880, to outline this forgotten empire. Besides the remains noticed under Boghazkeui, Carchemish, Hamath, Marash, Sakjegeuzi, and Sinjerli, the rock-sculptures of Ivriz and Karabel, the double-headed eagle and bull-sphinxes of Euyuk may be mentioned.

The prominent nose and squat build, the high cheek-bones and black pigtailed hair, the conical cap and upturned shoes, the dirk and double-axe, the horsed chariot and four-wheeled cart of Hittite monuments seem to betoken eastern contact. But the features formerly held to prove a mongoloid descent characterise upland dwellers elsewhere, and the qualities of leadership point to Caucasian rather than Tartar overlordship. The art manifests the transmission of ideas both from and to S. Mesopotamia and the pre-Hellenic Aegean. The Assyrian script was adapted to the local dialect. The religion was based upon the primitive Anatolian cults, which gave prominence to the earth-mother and the worship of a sky-god Teshub, allied to Thor. See *Assyria*; *Babylonia*; *Palestine*; consult also The Hittites, A. H. Sayce, 1903; Explorations in Bible Lands, H. V. Hilprecht, 1903; The Land of the Hittites, J. Garstang, 1910.

Hiungnu, or **Hsiungnu**. Ancient mounted pastoral nomads of Altaian stock in central Asia. They were skin-clad archers, without villages or agriculture, and the construction of the Great Wall about 214 B.C., followed shortly after by another in Chinese Turkistan, frustrated their southward raids, and led to their migration westward. See *Uigur*.

Hivites. One of the ancient tribes driven out of their territory by the Hebrews on their invasion of Palestine. Gibeon and Shechem were two of their chief centres. See *Palestine*.

Hjelmar. Lake of S. Sweden. It is 40 m. W. of Stockholm, and S.W. of Lake Malar, with which it is connected by a canal and the Arboda river. It is some 39 m. long by 13 m. wide; area about 195 sq. m.

H.M. Abbrev. for His (or Her) Majesty.

H.M.S. Abbrev. for His (or Her) Majesty's ship or service.

Ho. Primitive forest-tribe in the Singhbhum district of Chota Nagpur, Bihar and Orissa province, N. India. Skilful archers, numbering (1911) 420,571, they speak a Munda dialect and show less Hindu influence than their Santal congeners.

Hoadley, BENJAMIN (1676-1761). English prelate. Born at Westerham, Kent, Nov. 14, 1676, he was educated at S.

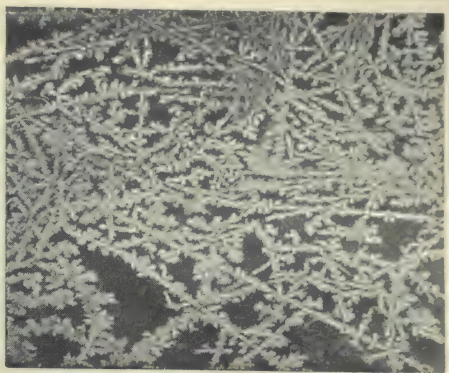
Catherine's Hall, Cambridge. A strong politician, he supported the accession of the House of Hanover to the British throne, being rewarded with the bishoprics of Bangor, Hereford, Salisbury, and Winchester. He was a thoroughgoing Erastian, and his theological views were nearly akin to those of the Unitarians. One of his sermons led to the Bangorian Controversy (*q.v.*). He died at Chelsea, April 17, 1761.

Hoang-Ho. Alternative spelling of the river of China better known as the Hwang-ho (*q.v.*).

Hoar Cross. Village of Staffordshire, England. It is on the edge of Needwood Forest, 4 m. E.S.E. of Abbots-Bromley. It is noted for its magnificent church, a Gothic building, built by Mrs. Meynell-Ingram in 1892, from the design of G. F. Bodley. Hoar Cross Hall is the seat of the Meynells.

Hoarding (old Fr. *hurd*, a palisade). Originally a fence or hurdle enclosing a house. It is specially used for temporary woodwork erected to protect buildings in course of erection. The word is now used for any wall or wooden fencing whereon advertisements can be displayed. See *Advertising*; *Poster*.

Hoare, SIR RICHARD COLT (1758-1838). English antiquary. Born at Stourhead, Wilts, Dec. 9, 1758, grandson of Sir Richard Hoare, Kt., banker and lord mayor of London in 1745, he devoted his time and ample means to archaeological pursuits. He published journals of tours in Ireland, Elba, Malta, Sicily, and Italy, translated and annotated Giralduus Cambrensis, 1806, and wrote *Ancient History of N. and S. Wiltshire*,



Hoar Frost particles deposited in characteristic pattern on a window-pane

1812-19, and *Modern History of S. Wiltshire*, 1822-44. He died at Stourhead, May 19, 1838.

Hoar Frost (A.S. *har*, white). Deposition of ice particles on surfaces when the dew point is below 32° F. The ice particles or crystals readily form on the branches of trees, leaves of grass, etc., and the heaviest hoar frosts are formed when the heaviest dews occur, on clear, calm nights, when radiation is little impeded. See *Dew*; *Frost*.

Hoarseness. Roughness of the voice, usually due to laryngitis. It may often be relieved by inhaling steam from a jug of boiling water to which a teaspoonful of tincture of benzoin (friars' balsam) has been added. See *Laryngitis*; *Voice*.

Hoar-Stone. Unhewn pillar-stone, standing alone, often hoary with lichen. It is usually a neolithic menhir, sometimes with the derivative purpose of a memorial or landmark, such as the Haranstan of the Ethelwulf charter of A.D. 847. The word designates two Worcestershire hamlets, a Gloucestershire menhir, and a long barrow at Duntisborne Abbots.

Hoatzin (*Opisthocomus cristatus*). South American bird. More nearly related to the game birds than to any other group, it is about the size of a pigeon, and resembles a small broad-tailed pheasant with an erectile crest on



Hoatzin. S. American bird

its head. The plumage is olive with white markings above and reddish below, and there is a naked patch on the breast.

Hoax. Deceptive story, trick, or practical joke. Among famous hoaxes are the Great Berners Street Hoax of 1809, perpetrated by Theodore Hook (*q.v.*); the Moon Hoax; and the Dreadnought Hoax of 1910. The Moon Hoax was perpetrated in The New York Sun, which published an announcement that the moon was inhabited. In 1910, officers were hoaxed into showing a party of sham Abyssinian princes over the battleship Dreadnought. The word is derived from hocus-pocus, the talk of conjurors, mountebanks, etc. See Imposture.

Hobart. Capital and second oldest city in Tasmania. It is situated on the S. side of the island at the foot of Mt. Wellington, on the Derwent, 12 m. from its mouth. It is a port of call for European mail steamers and for Australian interstate steamship liners, and is the rly. centre for Tasmania. Its beautiful harbour, deep and well sheltered, gives a fine setting to the city and its government house, parliament, university, and other fine public buildings. Industries include tanneries,



Hobart. The town and harbour of the Tasmanian capital



Hobart. Plan of the city with the harbour on the Derwent

foundries, saw-mills, breweries, flour-mills, and fruit-preserving factories, and the principal exports are apples, gold, tin, and copper. Its climate, comparable to that of the south of England, and fine scenery, attract visitors from the northern states. Pop. 37,000.



Hobart arms

Hobart-Hampden, AUGUSTUS CHARLES (1822-86). British sailor, commonly known as Hobart Pasha. The third son of the 6th earl of Buckinghamshire, he was born April 1, 1822, and entered the navy in 1835. In the Russian war he served in the Baltic and at the siege of Bomarsund, 1854.

Captain in 1863, he retired on half-pay and, being a keen partisan of the Secessionists in the American Civil War, obtained the command of a blockade runner. In 1867 he became naval adviser to the sultan of Turkey, was promoted admiral and pasha in 1869, and reorganized the Turkish navy. He died at Milan, June 19, 1886.



A. C. Hobart-Hampden, British sailor

Hobbema, MEINDERT (1638-1709). Dutch painter. The friend and possibly the pupil of Salomon and Jacob Ruisdael, he died in poverty at his birthplace in Amsterdam. Little appreciated by the patrons of his day, he had no lack of artistic friends, Philip Wouverman, Lingelbach, and the van de



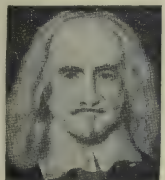
Hobbema. The Avenue, Middelharnis, Holland, an example of the Dutch painter's landscapes, painted in 1689

National Gallery, London

Veldes being glad to collaborate in his productions. Among his works may be cited, as typical of his quietly intimate style, *The Avenue*, *Middelharnis*, with six other paintings, in the National Gallery.

Hobbes, JOHN OLIVER (d. 1906). Pen-name of the British novelist, Pearl Mary Teresa Craigie (*q.v.*).

Hobbes, THOMAS (1588–1679). English philosopher. Born at Malmsbury, April 5, 1588, and edu-



Thomas Hobbes,
English philosopher

After Dobson

cated at Magdalen Hall, Oxford, he became in 1610 tutor to the grandson of the duke of Devonshire. The connexion thus formed with the Cavendish family was maintained intermittently during the rest of his life. His next pupil was the son of Sir Gervase Clifton, and in 1631 he became tutor to the son of his first pupil. On each occasion a continental tour was part of the scheme of education. Both at home and abroad Hobbes met some of the most eminent men of the time—notably Ben Jonson, Bacon, Galileo, Descartes, and Selden.

His first objects of study were classics and mathematics, but it is as a political philosopher that Hobbes is chiefly remembered. In 1640 he wrote a defence of monarchy, published later as two separate treatises entitled *Human Nature* and *De Corpore Politico* (*On The Body Politic*). In view of the political situation Hobbes thought it wise to leave England after this revelation of his opinions, and spent the next eleven years abroad. He returned to England in 1651, made his peace with the Commonwealth, and after the Restoration received a pension from Charles II. In 1651 his greatest work, *The Leviathan*, had appeared, and though the political theories were acceptable to the restored monarchy, the Church accused its author of atheism. He died at Hardwicke, Dec. 4, 1679.

In his system of ethics, Hobbes reduces everything to terms of self-interest, *e.g.* friendship is merely the sense of mutual dependence, and religion is essentially fear of inscrutable powers. He conceived mankind as living originally in a state of anarchy in which "the whole life of man is solitary, poor, nasty, brutish, and short." To abolish this anarchy and its resultant evils individuals agreed to resign the rights to a sovereign power, not necessarily one man,

and the sovereignty thus created for the common weal must be despotic and irrevocable.

This political theory, though partly vitiated by the fact that it is quite unhistorical, exercised an extraordinary though largely negative influence upon subsequent thinkers such as Rousseau, while disagreement with Hobbes's purely ethical conclusions proved to be a most stimulative influence in the realm of ethical speculation. Hobbes's style is unadorned but amazingly clear and forceful. See *Leviathan*; consult also Hobbes, G. Croom Robertson, 1886, and Life, Leslie Stephen, 1904.

Hobbs, JOHN BERRY (b. 1882). English professional cricketer. Born at Cambridge, Dec. 16, 1882,



John B. Hobbs,
English cricketer

he first played county cricket for Cambridgeshire in 1903, but qualified by residence to play for Surrey, for which county he first appeared in 1905. In 1920 he aggregated 2,827 runs for the season. He has several times represented his country versus the Australians, and played for the M.C.C. team in Australia, 1920–21.

Hobby (*Falco subbuteo*). Migratory falcon found in the southern districts of England during the summer. Of graceful shape, about a foot in length, and of reddish colour with white throat and breast, it feeds upon small birds and insects and is useful to the agriculturist. It was formerly used in hawking (*q.v.*).

Hobby-Horse. Old-time feature at fairs, pageants, and other popular festivities. It consisted of



Hobby-Horse. Popular figure at old English fairs

From a print published by T. Tegg in 1889

a gaudily coloured pasteboard or wooden figure of the head and hind quarters of a caparisoned horse girt round the waist of a performer, who imitated the curvettings of the animal.

The character appears with the other persons of the morris dance on a painted window of a house at Betley, Staffordshire. "Hobby-horse" was one of the names given to the "draisive," an early form of bicycle propelled by the feet, invented by Baron von Drais, and also denotes a toy horse, and the horse of the merry-go-round. Like the modern "hobby," the term has been applied to a favourite occupation or topic. Hobby comes from mid. Eng. *hobin*, perhaps a corruption of Robin, a name given to a horse. See Bicycle.

Hobgoblin. Traditional elf or goblin, generally of terrifying appearance. The prefix, *Hob*, is probably a corruption of Robin, and the name may have originally represented only the Robin Good-fellow of English folklore.

Hobhouse, ARTHUR HOBHOUSE, BARON (1819–1904). British lawyer. The son of Henry Hobhouse,



a civil servant, he was born at Hadspen, Somerset, Nov. 10, 1819. Educated at Eton and Balliol College, Oxford, he became a barrister, and soon enjoyed

a large practice in the chancery courts. In 1872, having then retired from work, he was appointed legal member of the council of India, but his best work was done between 1881 and 1901 as a member of the judicial committee of the privy council. In 1877 he was knighted, and in 1885 he was made a baron. The title, however, expired when he died, Dec. 6, 1904.

Hobhouse, SR CHARLES EDWARD HENRY (b. 1862). British politician. Born June 30, 1862, he was the eldest son of Sir C. P. Hobhouse, to whose baronetcy he succeeded in 1916. In 1892 he became Liberal M.P. for E. Wilts, and from 1900–18 sat for E. Bristol. In 1907 he was made under-secretary for India; 1908–11 he was financial secretary to the treasury; 1911–14 chancellor of the duchy, and postmaster-general in 1914–15.

Hobhouse, HENRY (b. 1854). British politician. Born March 1, 1854, and educated at Eton and Balliol College, Oxford, he was for some time a practising barrister, and in 1885 was returned to Parliament

as Liberal M.P. for E. Somerset. Almost at once he left the party on Home Rule, but as a Unionist he remained in the House of Commons until 1906. Hobhouse, who was made a privy councillor in 1902, was long chairman of the Somerset County Council, and in 1890 was made an ecclesiastical commissioner. He took special interest in education, being a member of the royal commission on secondary education, and in local government, on which he wrote. His son Stephen was imprisoned as a conscientious objector during the Great War, and published an account of his experiences.

Hoboken. City of New Jersey, U.S.A., in Hudson co. It stands on the W. side of the Hudson river, adjoining Jersey City, and is served by the Lehigh Valley and other rlys. On the opposite shore of the river is New York, with which Hoboken is connected by ferries and two subterranean tunnels. The principal buildings are the Stevens Institute of Technology, S. Mary's Hospital, and the public library.

Hoboken is an important port for the shipment of coal, and is the terminus of several European steamship lines. Its industrial establishments include foundries, machine, marine engine, motor fire-engine, and elevator works, and leather, lead pencil, silk, casket, wall-paper, chemical, and cork manufactories. Hoboken occupies the site of a Dutch farm which was razed by the Indians in 1643. It was laid out as a town in 1804, incorporated in 1849, and chartered as a city in 1855. Pop. 78,320, mostly Germans.

Hoboken, WEST. Town of New Jersey, U.S.A., in Hudson co. It adjoins Hoboken, and is served by the Lehigh Valley and other rlys. It occupies an elevated position a short distance W. of the Hudson river, and contains a public library, S. Michael's Monastery, and several churches. Silks and embroideries are the leading manufactures; others are braid, clothing, chemicals, and feathers. West Hoboken, originally a part of Bergen, was incorporated in 1884. Pop. 38,775.

Hobson, JOHN ATKINSON (b. 1858). British economist. Born at Derby, July 6, 1858, he was educated at Derby School and Lincoln College, Oxford. He was a schoolmaster until 1887, when he became a university extension lecturer for Oxford and London universities. During this time Hobson made a special study of economics, and began his association with the group opprobriously called Little Englanders, and with the intellectual Socialists. His

writings were undoubtedly able and scholarly, if extreme, presentations of his case, as was his advocacy of free trade. His books include



J. A. Hobson,
British economist
Elliott & Fry

Problems of Poverty, 1891; *The Problem of the Unemployed*, 1896; *The War in S. Africa*, 1900; *The Psychology of Jingoism*, 1901; *The Science of Wealth*, 1911; *The New Protectionism*, 1916; and *Taxation in the New State*, 1919.

Hobson, RICHMOND PEARSON (b. 1870). American sailor. Born in Alabama, Aug. 17, 1870, he was

educated at the U. S. naval academy, afterwards studying for his profession in Paris. He became a constructor, but saw active service in the war against Spain, being at the bombardment of Matanzas and the expedition against San Juan de Puerto. His great exploit, however, was the sinking of the Merrimac on June 3, 1898, at the entrance to Santiago Harbour, this being an attempt to shut in the Spanish fleet. This feat made him for a time the idol of America. In 1903 he retired from the service, and from 1906-15 was a member of Congress for Alabama.

Hobson, THOMAS (c. 1544-1631). Cambridge carrier and literary-stable keeper. His invariable refusal to allow any horse to be taken from his stables except in its proper turn is said to have given rise to the proverb Hobson's choice, i.e. take it or leave it. He regularly continued his journeys to London until 1630, when they were suspended on account of the plague. Milton wrote two humorous epitaphs on him, and a street and conduit in Cambridge are named after him.

Hobson-Jobson. Anglo-Indian term denoting a native festival excitement, especially during the Moharram celebration of the death of two of Mahomet's grandsons. It is the British soldiers' version, traceable back to 1829, of the wailing cry Ya Hasan, Ya Hosain. Earlier variants were Hossy Gossy, 1673; Hossein Jossein, 1720; and the Dutch Jaksom Baksom, 1726. The term was chosen by Sir H. Yule and A. C. Burnell as the title

of their glossary of colloquial Anglo-Indian words and phrases, rev. ed. 1903. The most familiar word of Hobson-Jobson type is Blighty (q.v.).

Hoche, LAZARE (1768-97). French soldier. Born June 25, 1768, he became a soldier in the Guard before the Revolution. He remained in the army after the fall of the monarchy, and in 1792 became an officer. In 1793 he was made a general, and in the same



A Hoche

year was placed at the head of an army. In the winter of 1793-94 he won several brilliant victories over the Austrians and Russians, but was soon imprisoned as a traitor. He was speedily released and in the field again, and his next exploits were against the royalists who were in arms in La Vendée. He was successful there, but he met with failure when he organized and led an expedition to invade Ireland in 1796. He was afterwards in a command on the Rhine. Hoche had just resigned the post of minister for war, which he had held but a few weeks, when he died at Wetzlar, Sept. 18, 1797. *Pron.* Ohsh.

Hochelaga. Name of a suburb of Montreal and of a county in the island of Montreal. It preserves the name of a native village inhabited by the Hochelaga or Beaver Indians, which stood where is now the city of Montreal. Jacques Cartier found it here in 1535, but eighty years later it had disappeared, and in 1642 Montreal was founded. *See* Montreal.

Hochkirch OR HOCHKIRCHEN BATTLE OF. Fought during the Seven Years' War, Oct. 14, 1758, between the Prussians on the one side and the Austrians and their allies on the other. Hochkirch is a village near Dresden. After his victory over the Russians at Dorndorf, Frederick the Great hastened to the help of his brother Henry, whose army covering Dresden was faced by a much stronger one. Moving to Hochkirch, where he found the foe, Frederick decided to attack, but by a coincidence Daun, the Austrian leader, made the same resolve. The result was a desperate encounter on the morning of the 14th, the Austrians having used the night to surround their foes. The Prussians fought well, but at length were driven from the field, leaving many guns as spoil. They lost about 10,000 men out of

40,000 engaged; the Austrians 7,500 out of 80,000-90,000. See Seven Years' War.

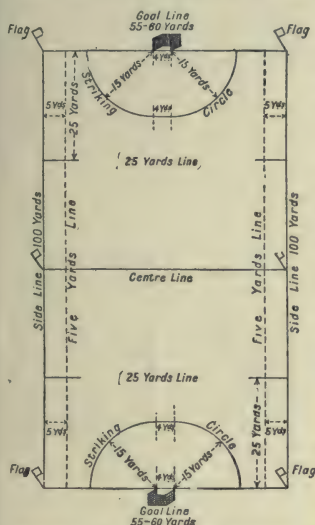
Höchst. Town of Germany. It stands on the Main, where it is joined by the Nidda, in the Prussian province of Hesse-Nassau, 6 m. from Frankfort. The chief building is the church of S. Justinus, with a

anglicised name hock is now applied generally to all Rhine white wines. Most of these can be had either still or sparkling, among the best of the former being Liebfraumilch and Marcobrunn; of the latter, Johannisberg, Liebfraumilch, and Ehrenbreitstein. Hock has a characteristic flavour and bouquet; it is a full-bodied, stable wine, containing from 9 p.c. to 12 p.c. of alcohol. Similar wines, made in Australia, California, and elsewhere from the hock or Riesling vine, are usually sweeter than the Rhine wines.

Hockey (Eng. hook; Fr. *hoquet*, crook). Outdoor game that has been played for centuries in various countries under various names. In Ireland a similar game is known as hurley, in Scotland as shinty, in Wales as bandy. The earliest form of the game is traceable to Ireland, and appears to have been originally played by one individual against another. The Irish game is re-

ferred to in the will of the first Irish king, Cathair Moir (d. 148). Cathair gave Crimthaun fifty hurling balls made of brass, with an equal number of brazen hurlets.

As now played, hockey became a recognized game about 1883, when a standard set of rules was framed by the Wimbledon Club. In the same year the game was adopted by Cambridge University, and later by Oxford; the first inter-varsity match being contested in 1890. On Jan. 18, 1886, the Hockey Association was founded. Its organization gave a great impetus to the game, and Irish, Welsh, Scottish, and English county associations sprang into existence. Although originally a game for men only, hockey was recognized as a suitable pastime for women, and in 1895 the All-England Women's Hockey Association was instituted. Irish, Welsh, and Scottish associations for ladies have existed for many years.



Hockey. Plan of the field as laid out by the Hockey Association

Gothic choir, and there are remains of a castle of the elector of Mainz. Machinery, tobacco, and beer are among the articles manufactured, and there are large dye works and a trade along the river. It is also a rly. junction. The town was part of the electorate of Mainz until the upheaval caused by Napoleon, its first charter being given in 1400 by the elector John. Later it was included in Hesse-Nassau, but was taken in 1866 by Prussia. Here on June 20, 1622, the Protestants under Christian, duke of Brunswick, were defeated by the troops of the Catholic League under Tilly, and here on Oct. 11, 1795, the Austrians defeated the French. Pop. 17,240.

Höchstädt. Town of Germany, in Bavaria. It stands on the Danube, 34 m. by rly. N.E. of Ulm. Here Marlborough and Prince Eugene defeated the French, Aug. 13, 1704, in the battle of Blenheim (q.v.). In the previous year (1703) the French and the Bavarians had defeated the imperial troops here. Malting and brewing are carried on. Pop. 2,300.

Hock. German white wine. Grown in the Rhine district and locally known as *Hochheimer*, from Hochheim, on the Main, the



Hockey. Typical scenes in the game. 1. The bully off. 2. A player secures the ball. 3. Play near the goal. 4. Goalkeeper effecting a clearance. 5. A stiff tussle in mid-field

Representative games were started in 1890, teams representing the N. and S. of England being opposed. In 1895 the first international game was decided, England defeating Ireland at Richmond by five goals to nil; and in the same year international ladies' teams representing these countries met at Brighton.

Dimensions of Ground

Hockey is played between two teams of eleven players, each player having a stick with a curved blade with which a ball is driven, the object being to force the ball into the opponents' goal. The correct formation of a team is five forwards, three half-backs, two backs, and a goalkeeper. The game is of 70 mins. duration, the teams changing ends after 35 mins. play. The dimensions of the ground are: length, 100 yds.; breadth, from 55 yds. to 60 yds. It is rectangular, as in football, the longer boundary lines being called side-lines and the shorter goal-lines. At a distance of 5 yds. a line is drawn parallel with each side-line, and 25 yds. from each goal a line 7 yds. long is drawn from the side-lines, parallel with each goal-line. A line is also drawn across the middle of the pitch between the side-lines, and a centre circle is marked. The goals are 4 yds. wide and 7 ft. high.

In front of each goal is drawn a line 4 yds. long parallel to and 15 yds. from the goal-line, and continued each way to the goal-line by drawing quarter circles with the goal-posts as centres. This is the striking circle. The ball is a leather cricket ball, the case painted white or made of white leather. The sticks are made of ash, have a flat front surface and curved blade, and may not weigh more than 28 oz. The game is started by the bully off, one player of each side bullying the ball from the centre of the ground.

To bully the ball each player strikes first the ground on his own side of the ball and then his opponent's stick three times alternately, after which the players may strike at the ball. A goal is scored when the ball passes between the uprights, below the cross-bar and entirely over the goal-line, the ball having been hit or touched by the stick of an attacker while within the striking circle.

Offences and Penalties

The following offences, if committed outside the striking circle, are penalised by a free hit to the opposing side: (a) Sticks, i.e. raising the stick above the shoulder when striking; (b) charging, kicking, shoving, tripping; (c) playing with the rounded back of stick, or hooking sticks when not within

striking distance of the ball; (d) picking up, knocking on, or carrying the ball otherwise than with the stick; (e) obstructing an opponent by running in between him and the ball; (f) interfering with the game unless with stick in hand; (g) taking any part in the game when in an offside position. Offences (b) to (f) are punishable, when committed by the defending team inside the striking circle, by a penalty bully to the attacking team; offence (g), committed by a defender inside the striking circle, is penalised by an ordinary bully at the spot where the offence occurred, a similar penalty being awarded for any breach of the free hit rule; offences (a) to (g), if committed by the attacking side within their opponents' striking circle, are punishable by a free hit to the opposing side.

Corners and Offsides

A penalty bully is played by the offender and a selected player of the other team on the spot where the offence occurred, all other players standing beyond the nearer 25 yds. line. A corner, awarded when the ball crosses the goal-line after being played by a defender behind the 25 yds. line, is taken from a point on the goal or side-line within 3 yds. of the corner flag. All defenders must stand behind their goal-line and attackers outside the circle. From a corner the attacking side can only score a goal after the ball has been stopped dead or hit after it has struck or been played by a defender. When the ball is sent behind by an attacker or unintentionally by a defender farther from goal than the 25 yds. line, a bully is held on the 25 yds. line opposite the point at which the ball crossed the goal-line. When the ball is played over either side-line it is rolled in, not bounced, by a player of the opposing team from the point on the line at which it left the field of play, no other player standing within 5 yds. A player is offside when the ball is hit or rolled in unless there are at least three players between him and his opponents' goal, and a free hit at the spot where the offence occurred is awarded the opposing team. No player can be offside in his own half of the field. See *The Complete Hockey Player*, E. E. White, 1909; *Hockey*, E. H. Green and E. E. White, 1912; *Hockey*, Eric Green, 1920.

E. G. Ogan

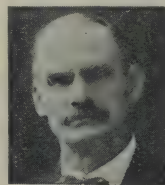
Hocking, JOSEPH (b. 1855). British Nonconformist minister and novelist. Born in Cornwall, a brother of Silas Hocking, he was educated at Victoria University, Manchester, and for a time was a

land surveyor. In 1884 he became minister of a Methodist church, and was a successful pastor and a popular preacher. It is chiefly by his novels that he is generally known, his first story, *Jabez Easterbrook*, 1891, having been followed every year by at least one work of fiction. Many of these have attained wide popularity both as serials and in volume form.

Hocking, SILAS KITTO (b. 1850). British novelist. Born in Cornwall, March 24, 1850, and educated privately, he was ordained minister of the United Methodist Church in 1870, and held various pastorates until 1896, when he retired. His first story, *Alec Green*, appeared in 1878, and was followed by *Her Benny*, 1879, this being the first of a long sequence of novels, chiefly of a religious tendency, many of which have enjoyed wide popularity. Hocking twice contested seats in Parliament without success; he also travelled widely.

Hockey-in-the-Hole. Former name of Ray Street, Clerkenwell, London, E.C. Notorious in the 17th and 18th centuries as a resort of thieves, highwaymen, bull-baiters, bulldog breeders, and infamous women, it had a bear garden which all classes patronised, where prize-fighting, cock-fighting, wrestling, and duels with swords took place. *Hockey-in-the-Hole* is mentioned by Steele in *The Tatler*, Addison in *The Spectator*, Pope in *The Dunciad*, Butler in *Hudibras*, and Gay in *Trivia* and *The Beggar's Opera*. See *History of Clerkenwell*, W. J. Pinks and E. J. Wood, 2nd ed. 1881.

Hocktide. Old English holiday observed on the second Monday and Tuesday after Easter. Formerly, in rural districts, Hock Tuesday was one of the days on which rent and other regular charges were paid. On Hock Monday it was the custom for the men to bind with ropes every woman or girl they met, releasing her on payment of a small sum of money, which was given to the Church. On Hock Tuesday the women bound the men, freeing them on the same conditions.



Joseph Hocking,
British novelist
Russell



Silas K. Hocking,
British novelist
Russell

The custom apparently originated about the 12th century, and died out early in the 18th. In London in the 15th and 16th centuries Hocktide was called Hobtide. The old Coventry play of Hock Tuesday, performed before Queen Elizabeth at Kenilworth in 1575, represented Saxons fighting with Danes and Saxon women binding and leading the Danes captive.

Hodder & Stoughton. London publishing house. It was founded by M. H. Hodder and T. W. Stoughton in 1868. In 1902 John Ernest Hodder Williams, who was knighted in 1919, joined the firm. Initial success was achieved with *From Log Cabin to White House*, a memoir of President Garfield, of which 250,000 copies were sold. In 1885 the Rev. (later Sir) William Robertson Nicoll (*q.v.*) took over the editorship of *The Expositor*, and became editor in chief and literary adviser. In 1886 he started *The British Weekly*, through the medium of which he speedily made himself the chief journalistic force in the Nonconformist world, and a few years afterwards *The Bookman*. Later the firm became a limited company.

Hoddesdon. Urban dist. and village of Hertfordshire, England. It is on the river Lea, 4 m. S.E. of Hertford, on the G.E.R., and was a fishing resort of Izaak Walton, in whose book it is mentioned. Market day, Wednesday. Pop. 5,200.

Hodeida. Seaport of Arabia. It lies about 150 m. N.W. of the strait of Bab el Mandeb, in the Yemen, on the E. coast of the Red Sea. The Turks had a fort there. It has some trade, exporting cotton, millet, and senna. It was occupied during the Great War, by a British garrison, which was attacked by the Imam Yehia, head of the Zaidi sect of Moslems, in Aug., 1919. The British evacuated it in Jan., 1921. See Yemen. Pop. 40,000.

Hodge. Character in William Stevenson's comedy, *Gammer Gurton's Needle*, 1575. He is Gammer Gurton's servant and his name, a nickname for Roger, has since served as a conventional designation for an English farm labourer or countryman. Regarded as more or less of a simpleton, it was the custom to make things of inferior quality for him under the belief that he would not know the difference, hence the hodge-razors referred to in Carlyle's *Miscellanies*, which were never meant to shave, but only to be sold.

Hodge, JOHN (b. 1855). British labour leader. Born at Muirkirk, Ayrshire, Oct. 29, 1855, he was educated at Motherwell Ironworks School and Hutchestown Grammar

School, Glasgow. He formed and became secretary of the British Steel Smelters', Mill, Iron and Tinplate Workers' Association, and was president of the Trades Union Congress in 1892, and president of the British section of the International Congress at Zürich, 1893. He was



John Hodge, British labour leader
Bassano

elected M.P. for Gorton division of Lancashire in 1906, and was minister of labour 1916—Aug., 1917, when he became minister of pensions. When the Labour party decided not to join the Lloyd George ministry in 1919, Hodge resigned. He was acting chairman of the Labour party in the



Hoddesdon. High Street of the Hertfordshire village

House of Commons, 1915, and took an active part in the formation of the Conciliation Boards, and the King's fund for disabled soldiers.

Hodgkin, THOMAS (1831–1913). British historian. Born in London, July 29, 1831, of Quaker parentage, Hodgkin was educated at London University and became partner in a bank at Newcastle-on-Tyne. He devoted much time to historical study, and made himself an authority on the so-called dark ages, the period after the fall of the Roman Empire. His greatest work is *Italy and her Invaders*, 1880–99; he also wrote *Theodoric the Goth*, 1891; *Life of Charles the Great*, 1897; and Vol. 1 of *Longman's Political History of England*, 1906. He died March 2, 1913.

Hodgkin's Disease or **LYMPHADENOMA**. Disease characterised by gradual enlargement of the lymphatic glands throughout the body. The cause is unknown. Young male persons are most frequently affected. The glands in the neck are usually the first to become enlarged, and thereafter the condition slowly spreads to the glands in the armpit, the groin, the chest, and the abdomen. The

spleen is also enlarged in most cases. The patient gradually becomes anaemic, and the pressure of the enlarged glands upon the windpipe may cause difficulty in breathing, or pressure upon the oesophagus difficulty in swallowing. Pressure upon nerves may cause severe pain in various parts of the body. The heart may be displaced, and its action interfered with. Death generally occurs in from one to three years. Sometimes the disease remains stationary for prolonged periods, but complete recovery is very rare. The administration of arsenic has often a marked effect in retarding the progress of the disease.

Hodgkinson, EATON (1789–1861). British mathematician. Born at Anderton, Cheshire, Feb. 29, 1789, he worked on a Cheshire farm. In 1811 he moved to Salford, where his aptitude for mathe-

matics gained him admission to a brilliant scientific circle. In 1822 his paper, *On the Transverse Strains and Strength of Materials*, in which he fixed the position of the neutral line in sections of rupture and fracture, was read to the Literary and Philosophical Society of Manchester. To the same body he communicated the result of his studies in the strength of iron beams, which were eventually embodied in the Hodgkinson beam. He was consulted by Stephenson with regard to the construction of the Britannia Bridge, and his opinion was sought on many engineering problems of his day. He died at Higher Broughton, Manchester, June 18, 1861.

Hodgson, SHADWORTH HOLLWAY (1832–1912). British metaphysician. Born at Boston, Lincolnshire, Dec. 25, 1832, he was educated at Rugby and Oxford. According to him, objectivity is nothing in itself beyond consciousness, but something belonging to consciousness. Existence is presence in consciousness. Physical happenings are not causes, but "real conditions" of psychical happenings. This view he declared to be identical with those put forward in the Platonic dialogue *Parmenides*—that the phenomenal world only exists in so far as it is the manifestation of the idea, in other words, that being and thought are the same. The most important of his works are *Time*

and Space, 1865; The Philosophy of Reflection, 1878; The Metaphysic of Experience, 1898. Hodgson was president of the Aristotelian Society, and died on June 16, 1912.

Hódmező-Vásárhely. Town of Hungary, in the co. of Csongrad. It stands on Lake Hodos, near the right bank of the river Tisza (Theiss), from whose floods it is protected by dykes. Modern in appearance, the town has several imposing buildings, including a town hall, hospitals, and a gymnasium. It lies in a fertile, agricultural district, and the township includes nearly 300 sq. m. of the surrounding territory. It is noted for a fine breed of horned cattle, and rears horses, sheep, and pigs. There are extensive vineyards in the locality, and choice white and red wines are produced. Cereals, chiefly wheat, oats, barley, maize, and millet, are grown, and brewing, oil-refining, and the manufacture of tobacco are carried on. Pop. 62,394, mostly Magyars, and two-thirds Protestants.

Hodograph (Gr. *hodos*, way, course; *graphein*, to describe). Curve of which the radius vector represents the magnitude and direction of a moving particle. If, from any fixed point, lines be drawn at every instant representing in magnitude and direction the velocity of a point describing any path in any manner, the extremities of these lines form a curve which is called the hodograph. It enables many problems of motion to be solved in a simple way.

Hodonin, FORMERLY GODING. Town of Czechoslovakia, in Moravia. It stands on the March, 34 m. S.E. of Brno (Brünn). It has an important tobacco factory, breweries, sawmills, etc. Pop. 12,200.

Hodson, WILLIAM STEPHEN RAIKES (1821-58). British soldier. Born at Maisemore Court, near Gloucester, March 19, 1821, and educated at Rugby and Trinity College, Cambridge, he entered the army and proceeded to India. Here he gained a unique reputation as adjutant, and eventually as commander of a corps of guides. In 1855, owing to confusion in the regimental accounts, he was removed from his command, but a second court of inquiry cleared his character.

During the Indian Mutiny, Hodson did signal service as commander of a body of irregular cavalry, known as Hodson's Horse, and as chief of the intelligence department. After the taking of Delhi, with only 50 men, he pursued and brought back the Mogul. On the following day, with 100 men, he tracked the princes of Delhi to the tomb where they had taken refuge. The princes

surrendered, but as the mob seemed likely to attempt a rescue, Hodson shot the princes one by one with his own hand, an act which was most adversely criticised. He died March 12, 1858. See Hodson of Hodson's Horse, G. H. Hodson, 1858; Four Famous Soldiers, T. R. E. Holmes, 1889; A Leader of Light Horse, L. J. Trotter, 1901.

Hoe. Instrument for breaking up the ground. The hand hoe is best made with a neck curved like



Hoe. Common forms of the garden implement. 1. Half moon. 2. S-h-in-steel. 3. Onion hoe with handle. 4. Dutch hoe

that of a swan; the horse-hoe, or grubber, for cultivation between the rows of roots or cereals, may either be a small three-shared machine that can be drawn by one horse, or a larger contrivance with as many as ten tines. The uses of the hoe are to remove weeds, to break up winter cap, and to produce a surface mulch by which the undue evaporation of moisture is prevented. See Agriculture; Egypt.

Hoe, RICHARD MARCH (1812-86). American inventor. Born at New York, Sept. 12, 1812, son of Robert



Richard Hoe, American inventor

Hoe, an English emigrant, and inventor of the Hoe printing press, he became a partner in his father's business. He and his two brothers became managers of the firm in 1841, and five years later produced a rotary press, the first of its kind, named Hoe's Lightning Press. An improvement appeared in 1871, which printed on both sides of the paper, which it cut and folded. Hoe died at Florence, June 7, 1886. See Printing.

Hoenir. One of the three gods in Norse mythology, the long-legged one, the lord of the ooze, synonymous with stork. After Midgard, the abode of mankind, was formed, Odin, Hoenir, and Lodur made man and woman from an ash and an elm, Hoenir's gift being speech. He is said to have first used the divining rod for revealing hidden waters.

Hoepfner, GENERAL VON (1859-1922). German soldier. He came into prominence in the Great

War, serving in the battle of the Somme, 1916, as chief of staff to Otto von Below. In Nov. he was appointed general in command of the aerial forces, including the anti-aircraft corps. Realizing the inferiority of the German air service in the battle of the Somme, he hastened production and showed great enterprise, the construction and employment of the German air squadrons being under his absolute control. He organized the bombing raids over England and behind the Allied front in France, encouraged new types of machines and new methods of attack, and instituted rewards.

He died Sept. 28, 1922.

Hoetzendorff, CONRAD FRANZ, BARON VON (b. 1852). Austrian soldier. Born at Penzing, near Vienna, Nov.



Baron Conrad von Hoetzendorff, Austrian soldier

11, 1852, he entered the Austrian army as a lieutenant of infantry in 1871, and in 1908 became general of infantry and inspector-general. He was chief of the general staff from 1912-16, when, on account of the defeat of the Austrians by Brusiloff in Galicia, he resigned. In 1918 Hoetzendorff commanded the Austrian forces whose attack on the British and Italians on the Asiago plateau was completely repulsed.

Hof. Town of Germany, in Oberfranken, Bavaria. It lies N.E. of Baireuth, on the Saale, near the Bohemian frontier. It possesses a Gothic Rathaus dating from 1563, and a church dedicated to S. Michael, consecrated in 1299, both restored in the 19th century. Hof is an important centre of the textile industry. Pop. 41,130.

Hofer, ANDREAS (1767-1810). Tirolese patriot. Born at St. Leonard, in the Passeier valley, Tirol. Nov. 22, 1767, he inherited his father's business as an innkeeper. In 1797 he enlisted a body of sharpshooters to drive the French from the neighbourhood of Lake Garda, and in 1805 he led his troops against Ney. By the treaty of Pressburg, 1805, Tirol passed into the power of France and was joined to Bavaria, but Hofer led a secret agitation in favour of annexation to Austria. On the outbreak of war between that country and

Hoffmann, AUGUST HEINRICH (1798-1874). German poet and scholar. He was born, April 2,



A. H. Hoffmann,
German poet

1798, at Fallersleben, in Lüneburg, and is hence sometimes known as Hoffmann von Fallersleben. He was librarian at Breslau University, 1823-38, and professor there, 1835-42. The publication of his Unpolitische Lieder (Unpolitical Songs), 1841-42, caused his dismissal. He produced Deutschland, Deutschland über Alles, 1841, which took the position of the national song of the German Empire. Versatile and prolific in lyrics inspired by love, wine, patriotism, and good fellowship, his songs enjoyed a great vogue. He wrote much on early German literature, hymnology, and philology. He died at Corvei, Jan. 19, 1874. See his Mein Leben (Autobiography), 1868-70.

Hoffmann, ERNST THEODOR AMADEUS (1776-1822). German author. Born at Königsberg, Jan. 24, 1776, he studied law, but spent much time wandering about Germany, supporting himself by writing and portrait painting, composing, and managing provincial theatres. In 1816 he became chancellor of the court of appeal at Berlin, and about this time adopted the name of Amadeus in place of his baptismal Wilhelm, in honour of Mozart, to whom he was devoted. The short stories and essays he had published in 1814-15 in Phantasistücke had been well received, and the following year the novel Die Elixiere des Teufels made him famous. Nachtstücke, 1817, and Die Serapionsbrüder, 1819-21, contain short stories which occupy a prominent place in the romantic literature of the period.

Extraordinarily prolific, Hoffmann composed, painted, and wrote with equal grace, and became the centre of a large circle of musical and literary talent. His influence on the work of Schumann was especially marked, the composer owing much of his inspiration to Hoffmann's stories. He died June 25, 1822. Much of his work has been translated into English.

Hofhuf or Hofuf, EL. Town of Arabia, the capital of El Hasa. It is situated about 40 m. inland from the Persian Gulf, and is on the Pilgrims' Road through Nejd to Mecca. With Mubarriz it forms the two great urban centres in the great oasis in the S. of El Hasa. Pop. est. 40,000.

Hoffmann, AUGUST WILHELM (1818-92). A German chemist. Born at Giessen, April 8, 1818, he



A. W. Hoffmann,
German chemist

studied chemistry under Liebig in his native town. In 1848 he was appointed superintendent of the Royal College of Chemistry, London, afterwards incorporated in the Imperial College of Science at S. Kensington. He remained in London until 1863, when he was appointed professor of chemistry in Berlin, a position which he held until his death.

To him is due the discovery of the composition of rosaniline, which was of great technical importance in the early days of the coal-tar colour industry. He discovered a beautiful aniline dye known as Hofmann violet. After he returned to Germany he founded (1868) a chemical society on the model of the London society. He died in Berlin, May 5, 1892.

Hofmann, JOSEF CASIMIR (b. 1876). Polish pianist. Born at Cracow Jan. 20, 1876, the son of a professor at the Warsaw conservatoire, he studied under his father and under Rubenstein, and as a youthful prodigy went on tour in Europe and America. In 1888 he retired for six years from public life, but after a further period of study reappeared and took a high place among contemporary musicians, appearing in London in Oct. 1920, for the first time since 1903.

Hofmeyr, JAN HENDRIK (1845-1909). S. African politician. Born in Cape Town, July 4 1845, he took up journalism and in 1879 was elected M.P. for Stellenbosch in the Cape parliament, where his strong Dutch sympathies brought him into notice. In 1878 he organized the Dutch farmers and by means of the Afrikaner Bond welded the Dutch element into a



J. H. Hofmeyr,
S. African politician



Andreas Hofer, monument by Natter, erected at Berg Isel, near Innsbruck, in 1893

France in 1809, he defeated the Bavarians at Sterzing and Innsbruck, and drove them from Tirol. Lefebvre's army, sent by Napoleon to stamp out this insurrection, was beaten at Berg Isel, but by the treaty of Schönbrunn Austria abandoned the country to the French, who captured Hofer, took him to Mantua, and there shot him, Feb. 20, 1810.

Höfding, HARALD (b. 1843). Danish author and philosopher. Born in Copenhagen, March 11, 1843, he published German Philosophy after Hegel in 1872, followed by Contemporary English Philosophy, 1874; The Foundation of Ethics, 1876; Charles Darwin, 1889; The Ethics of John Stuart Mill, 1909; and Henri Bergson's Philosophy, 1914. There are Eng. trans. of his History of Modern Philosophy, 1900. Brief History of Modern Philosophy, 1912; and Modern Philosophy and Lectures on Bergson, 1915.

strong political entity. He dissociated himself from Kruger's anti-British policy, but he was equally distrustful of Cecil Rhodes and his imperialistic ideas. Associating himself with no party in the S. African War, he went to Europe until it was over, and returned to Africa to meet a political defeat. He retained much influence, however, and was on a mission to London when he died, Oct. 16, 1909.

Hogarth, DAVID GEORGE (b. 1862). British archaeologist. Born at Barton-on-Humber, he was educated at Winchester and Magdalen College, Oxford. He carried out explorations in Asia Minor, 1887-94, and excavations in Crete, Egypt, Ephesus, Assiut, and Carmemish. He was director of the British school at Athens, 1897-1900, and succeeded Sir Arthur Evans as keeper of the Ashmolean Museum, Oxford, in 1909. His works include *Modern and Ancient Roads in E. Asia Minor*, 1892; *The Nearer East*, 1902; *The Penetration of Arabia*, 1904; *The Archaic Artemisia of Ephesus*, 1908; *Ionia and the East*, 1909; *The Ancient East*, 1914; and *The Balkans*, 1915. During the Great War he was engaged on special service as an officer of the R.N.V.R.

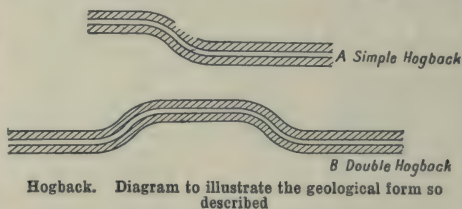
Hogarth, WILLIAM (1697-1764). English painter, engraver, chronicler, and moralist. Hogarth, belonging to a Westmorland family, was born in Bartholomew Close, City of London, Nov. 10, 1697. He began his career as apprentice to a silversmith in Leicester Fields, but, as a boy, had amused himself with painting, and paid some attention to engraving. His master set him to engrave visiting cards, shop bills, and coats of arms, but he himself worked on illustrations for books, and in quite early days produced six for King's History of the Heathen Gods. In 1726 he became known by some copper-plates for Butler's *Hudibras*. Three years later, running away with the only daughter of the artist Sir James Thornhill, he settled down in South Lambeth.

His well-known trip to the Isle of Sheppey took place in 1732. He was one of a party of four, and to the account of the journey and its adventures Hogarth supplied the illustrations. The MS. can still be seen in the British Museum. In the following year he removed to Leicester Fields, and commenced his long series of didactic chronicles in pictorial art, commencing with *The Harlot's Progress*. This group of works, which includes *The Rake's Progress*, *The Enraged Musician*, the wonderful series of *Marriage à la Mode*, *Beer Street* and *Gin Lane*, *The Lady's Last*



Wm. Hogarth
Self-portrait in National Portrait Gallery

Stake, Industry and Idleness, and others, takes high position as an exposition of the life of the day.



His popular portraits and interiors belong to quite another order. They possess a charm of composition, colouring, and atmosphere entirely their own, which can never be too highly praised. They are works of the highest artistic merit, as portraits unflinching, as works of decoration charming, and in this respect, as a portrait painter, especially when those of Lord Lovat, Thomas Coram, the artist himself, and David Garrick are considered, Hogarth has had few rivals. Equally does he stand alone in his extraordinary moral chronicles, vivid pictures of the evil side of English life of the day, social and domestic vices, attached at their most vulnerable points by ridicule. He waged a strong crusade against criminality, corruption, hypocrisy, and extravagance, and even, perhaps, still more strongly against drunkenness and cruelty to animals.

Hogarth became serjeant painter to the king in 1757. Several of his best pictures are at the Soane Museum in Lincoln's Inn Fields; others, including his great portrait of Thomas Coram, its founder, are at the Foundling Hospital; while yet others can be seen at S. Bartholomew's Hospital, Grosvenor House, the National Gallery, the National

Portrait Gallery, Windsor Castle, and Lambeth Palace. His house at Chiswick was saved from destruction by the generosity of Lt.-Col. Shipway, and presented to the Middlesex County Council in trust for the public. By the donor's courtesy, representations of many of the artist's works have been placed in the rooms, and the house in some measure has been restored to its original condition. Hogarth was in the habit of spending all the summer at Chiswick, and the winter at his house in Leicester Fields, where he died Oct. 26, 1764. He was buried in Chiswick churchyard. See Art; Caricature; Cockfighting; Fenton, L.

G. C. Williamson
Bibliography. The Genuine Works of William Hogarth, J. Nichols and G. Stevens, 1808-17; Works of William Hogarth, T. Clerk, 1810; Works of William Hogarth, W. C. Monkhouse, 1872; Hogarth, Austin Dobson, 1907; Hogarth's London, H. B. Wheatley, 1909.

Hogback or **MONOCLINE** (Gr. *monos*, alone; *klinein*, to incline). Land form which arises from erosion of inclined strata. From the ridge one slope is the steep eroded edge of the stratum which dips beyond the ridge to form the other

slope. The scarp face usually overlooks a valley, and as erosion proceeds the monoclinical ridge shifts steadily away from the valley floor. This type of land form arises where resistant rocks outcrop between softer strata which are carved into valleys. See *Hog's Back*.

Hogg, JAMES (1770-1835). Scottish poet, known as the Ettrick Shepherd. Born at Ettrick, Selkirkshire, the son of a shepherd, he received a scanty education, but at the age of sixteen a reading of *The Gentle Shepherd* by Allan Ramsay inspired him with the desire to write poetry. His poetical leanings were further developed by his connexion with Sir Walter Scott, to whom he supplied some old ballads for his *Border Minstrelsy*. He did not obtain any success until 1807, when a volume of poems entitled *The Mountain Bard*, and a practical treatise on the care of sheep, brought him in £300, which he lost in unprofitable farming.

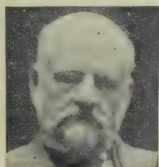


James Hogg

The Queen's Wake, 1813, a series of ballads supposed to have been recited before Mary Queen of Scots at a competition of Scottish bards, was the first work to bring Hogg something more than a local reputation. The Queen's Wake is a work of real merit, with a strong vein of impressive if somewhat fantastic imagination. The latter

half of Hogg's life was spent partly in Edinburgh and partly at Altrive in Yarrow on a farm of which the duke of Buccleuch gave him a life lease, and where he died Nov. 21, 1835. Hogg was a prolific writer both in verse and in prose. Among his best known poems are The Poetic Mirror, Bonny Kilmeny, and some fine lyrics such as To the Skylark, When the Kye comes Hame, and Cam' ye by Atholl? See Memorials of James Hogg, M. G. Garden, 1903.

Hogg, QUINTIN (1845-1903). British philanthropist. The fourteenth child of Sir James Weir



Quintin Hogg,
British philanthropist
Elliott & Fry

Hogg, and brother of Sir James Mc-Naghten McGarel Hogg, who became 1st Baron Magheramorne, he was born in London, Feb. 14, 1845, and educated at Eton. In 1882 he purchased the lease of the Royal Polytechnic Institution, Regent Street. He opened it on Sept. 25 as a successor to an earlier Youths' Christian Institute, his object being to provide young men with instruction, recreation, and social intercourse. Hogg died at the Polytechnic, Jan. 17, 1903. See Polytechnic: consult also Life, E. M. Hogg, 1904. His eldest son, Sir Douglas McGarel Hogg was born Feb. 28, 1872. He was called to the Bar in 1902, after which he became leading counsel in many law cases. He was elected conservative M.P. for St. Marylebone in 1922 and at subsequent elections, and from Oct. 1922 to Jan. 1924 was attorney-general, taking this office again in Nov. 1924. He was knighted, 1922.

Hoggar OR AHAGGAR. Mountainous district in the Sahara, S. of Algeria. The mountains form an impassable barrier across the route

of a direct Trans-Sahara Rly., which will have to turn them to the E. or W. To the N.W. is In-Salah, occupied by the French on Dec. 28, 1899, through or near which the Trans-Sahara Rly. will pass.

Hoghton. Village of Lancashire, England. It lies between Preston and Blackburn, on the L. & Y. Rly., and is notable for

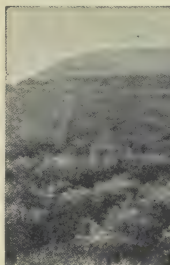


Hoghton, Lancashire. Courtyard of Hoghton Tower
Firth

the seat of the De Hoghton family. Hoghton Tower, originally built in 1565. On his visit here in 1617 James I is said by popular tradition to have "knighted" the loin of beef (sirloin).

Hog Island. Island in the Delaware river off the city of Philadelphia, U.S.A., of which it forms a part. The conversion of its 946 acres, mainly swamp, into a shipyard during the Great War broke all engineering records for speed, and was an important contribution of the U.S.A. to the fight against U-boat piracy.

The U.S. Shipping Board on Sept. 13, 1917, authorised the International Shipbuilding Corpora-



tion to construct at Hog Island a shipyard and 50 vessels of 7,500 tons. Work began on Oct. 1, 1917, and the first ship, the Questconck, was launched Aug. 5, 1918. Hog Island was designed to be

merely a yard where parts of ships, fabricated at about 100 inland plants, might be assembled. Fifty slipways, stretching for 1½ m. along the river front, and 7 fitting-out piers, each 1,000 ft. long with enough water alongside to float vessels of 28 ft. draught, were constructed.

To serve the slipways 82 miles of railway track were laid and 470 cranes were erected on towers, into which 6,000 tons of steel had been built. 140,000 piles had to be driven in the course of the work, and 3 m. of dykes were thrown up to serve as an impounding basin for the deposit of the dredgings. Twenty-seven warehouses with a floor area of 1,700,000 sq. ft. were built, and accommodation had to be provided for the 33,000 men employed. The cost of the yard, which had been estimated at 21,000,000 dols., worked out at over 60,000,000 dols.

Hogland OR HOCHLAND. Island of Finland. It is in the govt. of Viborg, in the Gulf of Finland, and was at one time joined to the mainland. It is known for a vibrating rock, which produces the sounds of an organ.

Hogmanay OR CAKE DAY. Name used in Scotland and the N. of England for New Year's Eve, and the gifts then bestowed. Among hogmanay customs are the exchanging of presents between friends, the giving of oatakes to children to the cry of "hogmanay," and the singing and acting of the guisers or masquers. In London, Scotsmen celebrate hogmanay night in St. Paul's Churchyard. Though first recorded in Scotland in the 17th century the word, variously spelt hogmena, hogmenay,

hagman heigh, is probably of early French origin, and a corruption of the old Fr. *aguillan-neuf*, explained as "to the mistletoe the new year" (*au gui l'an neuf*), a term of rejoicing derived from the Druids



Hog Island, U.S.A. Shipbuilding wharves at the launch of the Questconck, Aug., 1918. Above, virgin land of the island as it had appeared ten months earlier

Hog Plum (*Spondias*). Genus of trees of the natural order Anacardiaceae, natives of the tropics of both hemispheres. The leaves are divided into long, opposite leaflets, and the flowers are small with four or five each of sepals and petals. The fleshy fruit is plum-like and



Hog Plum. Leaf, flowers, and fruit of *Spondias dulcis*

contains four or five seeds. These fruits vary in flavour, according to species, and some of them, though palatable to natives, are not appreciated by strangers. *S. lutea*, native of the West Indies, is known as golden apple and Jamaica plum. *S. dulcis*, of the Society Islands, is the sweet Otaheite apple, with a pineapple-like flavour. The unripe fruits of *S. mangifera* are used as a pickle in India.

Hog's Back. Western termination of the North Downs in Surrey. It is so called on account of its outline. It runs from Guildford to Farnham, about 10 m.; the height of the chalk elevation is from 350 to 500 ft., and its breadth at the top is about 500 yds. See Downs.

Hog's Bank. Name given to a long ridge W. of Longatte, near Bullecourt, France. Here the support brigade of the British 59th div. stemmed the German advance towards Amiens, March 25, 1918. See Somme, Battles of the.

Hogshead. Old English measure of liquid capacity. In 1483 it was fixed at 63 wine galls, equal to 52½ impl. galls., but now it equals 54 galls. for beer, cider, etc. As a large cask, its capacity varies according to commodity and locality, as for molasses, sugar, or tobacco. See Weights and Measures.

Hogue. British cruiser, one of the three torpedoed by the German submarine U 9 off the Dutch coast, Sept. 22, 1914. Her loss of life was 372 officers and men. Twenty-four of her crew were saved on a raft and taken to Holland. See Cressy.

Hohenberg, SOPHIE, DUCHESS (or 1868-1914). Austrian princess. Born at Stuttgart of noble parentage, she married Archduke Francis

Ferdinand of Austria in 1900. The alliance wasmorganatic and their children, therefore, forfeited the right of succession to the Austro-Hungarian imperial throne to which their father was heir apparent. The duchess was driving with her husband when he was assassinated at Sarajevo, June 28, 1914, and shared his fate. See Francis Ferdinand; Hapsburg.

Hohenfriedberg, BATTLE OF. Prussian victory over the allied Austrians and Saxons in the war of the Austrian Succession, June 3, 1745. Frederick the Great, whose army of 65,000 was opposed to the allied forces of Prince Charles of Lorraine, 70,000 strong, had been watching the advance of his enemy upon Silesia, and had kept his army concealed. Seizing an opportunity of striking, during the night of June 3, he manoeuvred his men and guns, and at daybreak opened a furious attack on the enemy left wing. After two hours of fighting the battle became general, and despite a stiff resistance on the part of the Austrians, an irresistible charge of the Baireuth dragoons finished the battle with the capture of 2,000 prisoners and 66 Austrian colours.

Hohenheim. District and castle of Germany. It is 6 m. S. of Stuttgart. The castle, built 1785, is used as a school of agriculture, with a botanical garden.

Hohenlinden, BATTLE OF. French victory over the Austrians, Dec. 3, 1800. The Austrian archduke John, in order to cut off the French army under Moreau, who had established himself N. of the Inn, resolved to cross the Lower Inn and seize Munich. Hampered by bad weather, the Austrians were advancing through the driving snow when, on Dec. 3, Moreau launched an attack against them. Ney and Grouchy engaged the van, while Richepanse skillfully attacked the rear, and, thus caught between two shears, the Austrian defence gave way. They lost heavily, 10,000 casualties, and as many prisoners, together with a hundred guns. The French losses were little more than 5,000.

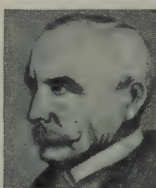
Hohenlohe. Former principality of Germany, consisting mainly of the Jagst kreis of Württemberg. It lies to the E. of Heilbronn on the Bavarian frontier, and was mediatised in 1807. The family of Hohenlohe, which traces its descent from the 12th century, was divided into two lines, Hohenlohe-Neuenstein, and Hohenlohe-Waldenburg, in 1551, and has produced several soldiers and statesmen, two of whom, Prince Friedrich Ludwig of Hohenlohe-

Ingelfingen, and Prince Chlodwig of Hohenlohe-Schillingsfürst, are mentioned in separate articles.

Another prominent member of the family was Prince Kraft of Hohenlohe-Ingelfingen (1827-92), an artillery officer, some of whose works on military subjects were of importance. Prince Alexander of Hohenlohe-Waldenburg-Schillingsfürst (1794-1849) entered the Church and became known as a worker of miraculous cures, in connexion with which he encountered the opposition of the civil authorities. Prince Gustav of Hohenlohe-Schillingsfürst (1823-96), a brother of Prince Chlodwig, was another eminent Churchman who became a cardinal in 1866 and took an active part in opposing the Kulturkampf (*q.v.*).

Hohenlohe - Ingelfingen, FRIEDRICH LUDWIG, PRINCE OF (1746-1818). Prussian general. Born at Ingelfingen, Württemberg, Jan. 31, 1746, he saw service against the Prussians during the Seven Years' War. After this he entered the Prussian army, rising to high command by 1794, when he beat the French at Kaiserslautern as a corps commander. In 1806, however, he was defeated by Napoleon at Jena (Oct. 14), and, despite personal gallantry, was forced to surrender at Prenzlau with 17,000 men on Oct. 28. He died near Kosel, Silesia, Feb. 15, 1818.

Hohenlohe - Schillingsfürst, CHLODWIG KARL VICTOR, PRINCE OF (1819-1901). German states-



Prince Hohenlohe-Schillingsfürst, German statesman

man. Born at Rotenburg, on the Fulda, in Hesse, March 31, 1819, of the junior branch of the family, he entered the diplomatic service after some years of preliminary training as a civil servant. From 1866-70 he was Bavarian minister for foreign affairs and head of the government, in which latter capacity he played an important part in assisting Bismarck to bring about the union of N. and S. Germany. In 1874 he went as German ambassador to Paris, and was one of Germany's representatives at the Berlin Congress of 1878. From 1885-94 he was governor of Alsace-Lorraine, leaving Strasbourg only to take the important post of imperial chancellor in place of Von Caprivi. Most of his work as chancellor was done behind the scenes, but he was a steady supporter of Bismarck's policy, and remained

the emperor's chief adviser until Oct., 1900. He died at Ragatz, Switzerland, July 6, 1901. The publication of his Memoirs in 1906 caused a sensation by their candour in certain directions. *See* Berlin, Congress of; consult Memoirs, Eng. trans. G. W. Chrystal, 1906.

Hohenmauth. Town and dist., formerly in the Bohemian prov. of the Austrian empire, now known as Mýto Vysoké (*q.v.*).

Hohenschwangau. Village and castle of Germany, in Bavaria. It lies 3 m. S.E. of Füssen, at the W. end of the Ammer Gebirge. The castle belonged to the Guelph family until 1567, when it passed to the dukes of Bavaria, afterwards becoming a royal residence.

Hohenstaufen. Name of a famous German family, members of which were rulers of the medieval empire from 1138–1254. The name is taken from a hill near Lorsch, in Württemberg, on which the early Hohenstaufens had their castle, some remains of which still exist.

The family first became prominent in the 11th century, towards the end of which one of them was made duke of Swabia. This gave them an added importance in Germany, especially in the time when Henry V was emperor. Frederick and Conrad of Hohenstaufen were his nephews, and when he died, in 1125, Frederick, his heir, just failed to secure his throne. In 1138, however, Conrad was chosen German king. Frederick I Barbarossa succeeded him in 1152, and then came Henry VI in 1190. After a period of decline the position of the Hohenstaufens was restored by Frederick II, but when his grandson Conradin was put to death in 1268 the male line became extinct. *See* Empire; Frederick I; Frederick II.

Hohenstein-Ernstthal. Town of Germany, in Saxony. It stands 10 m. W. of Chemnitz. It is chiefly occupied with textiles, knitting, etc. Pop. 15,776.

Hohenzollern. Name of the family that supplied kings to Prussia from 1701 to 1918 and German emperors from 1871 to 1918. The family was first heard of in S. Germany, its earliest members being nobles who called themselves counts of Zollern, the hill on which their castle stood. This is about 2 m. from Hechingen, which is 30 m. from Stuttgart, and was known as Hohen or High Zollern. The castle, of which some ruins remain, is said to have been built

in the 9th century, but the first authoritative mention of its counts is in the 11th. The existing castle on the hill was built by Frederick William IV (1795–1862).

Frederick was always a favourite name in this family, and in the 12th century two Fredericks, father and son, were very useful to the German kings of their time. A third Frederick further increased the importance of the family by a marriage which made him burgrave of Nuremberg.

In 1227 the family lands were divided, and two main branches of the Hohenzollerns came into existence. The elder kept Zollern and the lands there, and was known as the Swabian: the younger supplied

liam, under whom it became a European power. In 1700 his son Frederick became king of Prussia, and this title superseded the earlier one. The family reached the summit of its greatness when William I was crowned German emperor in 1871. Ansbach and Baireuth served meanwhile as inheritances for younger sons until, in 1791, they were sold to the king of Prussia.

All this time the Swabian Hohenzollerns continued to rule their lands in comparative obscurity. The emperor Charles V befriended them, and they soon formed the lines Hohenzollern-Hechingen and Hohenzollern-Sigmaringen. Both rulers were princes of the empire, and they maintained

their little courts until 1848. Then they resigned their thrones and their territories became the property of the king of Prussia, according to an arrangement made in 1695. The land was formed into the prov. of Hohenzollern, and was part of Prussia until the revolution of 1918. These Swabian Hohenzollerns took their places as younger members of the



Hohenstaufen. View of the Württemberg hill on which formerly stood the castle of the famous family

burgresses to Nuremberg, and, as that city was in Franconia, was known as the Franconian. The Franconian Hohenzollerns were the more ambitious. One Frederick, burgrave of Nuremberg, obtained the principality of Baireuth, and both he and his father, another Frederick, had much to do with the affairs of Germany in the troubled 13th century. The younger Frederick, for instance, in 1273, helped Rudolph of Hapsburg to secure the throne so long held by his descendants. His son, another Frederick, obtained Ansbach, and rendered invaluable service to Louis IV. A later Frederick was made a prince of the empire in 1363.

In 1455 the European importance of the Hohenzollerns began. Brandenburg was without a ruler, and the emperor Sigismund gave it to his friend, Frederick of Hohenzollern, who became its margrave and one of the seven electors. This shifted the power of the Hohenzollerns from S. to N. Germany, and henceforward they were identified closely with Brandenburg. Under their rule its area and wealth were increased, the most vigorous of them being perhaps the great elector Frederick Wil-

house. One of them, Leopold, was suggested as king of Spain in 1870, and another, Charles, became king of Rumania in 1881. The revolution of 1918 reduced all the Hohenzollerns, except the king of Rumania, to the position of private individuals. *See* Germany; Prussia; William II; consult also The House of Hohenzollern, E. A. B. Hodgetts, 1911.

A. W. Holland

Hohenzollern Redoubt. Name given to an intricate trench fortification in the German first line at the battle of Loos, 1915. It lay about 4½ m. N. of the village of Loos, in the dept. of Pas-de-Calais. It was pear-shaped, with its broad end pointing N., and had a frontage of 500 yds. *See* Loos, Battle of.

Hohe Tauern. Range of mts. in the Austrian Tirol. It trends from W. to E., to the S. of Salzburg, between the Pinzgau and the Puster Thal. The highest peaks are the Gross Glockner (12,460 ft.) and the Gross Venediger (12,000 ft.). The range, which is continued W. by the Zillertal Alps and E. by the Niedere Tauern, is crossed by no road, but the rly. from Salzburg to Carinthia and the S. passes it by means of a series of tunnels.



Hohenzollern province arms

Hoihau. Port of Kiungchow, the capital of the Chinese administrative district of Kiungchow, which comprises Hainan Island, off the S. coast of China. Hoihau is a walled town which owes its importance to the opening of Kiungchow as a treaty port. Here are the foreign consulates and the customs station. The name means seaport. Pop. 25,000.

Hokitika. Capital of Westland, South Island of New Zealand. It is a centre of gold-mining, and has rly. communication with Greymouth, and thence *via* Otrira across the island. Gold was discovered in the sands on the shore there in 1865. Nearly £1,500,000 was produced within a year, but gold-mining is now only a small industry, since it has not been possible to discover the auriferous rocks in the Southern Alps whence the alluvial gold originated. Pop. 2,090.

Hokkaido. Term applied to a northern section of Japan, that includes Yezo and the Kurile Islands (*q.v.*). Yezo, to which the name Hokkaido is frequently loosely applied, has an area of 30,500 sq. m., and is separated from Sakhalin (Karafuto) by Soya Strait, and from Honshu, the Japanese mainland, by Tsugaru Strait.

In general the shape of Yezo is due to the lie of the mountain ranges of the interior, for the land usually rises somewhat rapidly from the coast. The central block of mountains, with many peaks above a mile high, culminates in Wutakkamushpa (7,300 ft.); from it ridges radiate to the N., W., and S.; W. of the W. and S. ridges lie the valleys of the two largest rivers, Teshio and Ishikari, with a coastal ridge W. of the valleys. W. and S. of Sapporo, ridges form a backbone as far as Hakodate, the highest point being Makkarinupuri (6,500 ft.), a graceful tree-clad cone, with a crater 2 m. in circumference. Tarumae, to the E. of Makkarinupuri, is an active volcano, and the majority of the peaks are extinct craters; between Tarumae and Mororan is the hot spring and geyser district of Noboribetsu.

The main rly. line is from Hakodate to Kushiro through Otaru, Sapporo, and Asahigawa; there are branches to the coast at Iwanai, Mororan, Rumoi, and Abashiri, and a N. branch towards Soya Strait which has reached Otoiueppu. From Kushiro the line will go to Nemuro, the port for the Kuriles. Ferry services are maintained from Hakodate and Mororan to Aomori in Honshu; the main steamship service is from

Otaru and Hakodate to Kobe. Sapporo, a new town laid out in 1869, is the capital, and Hakodate is the chief port; Otaru and Mororan export coal from the Yubari and smaller coalfields. Mororan has a steel foundry, but fishing, lumbering, and mining are the principal industries.

Tsugaru Strait is a deep channel which separates the flora and fauna of Yezo from those of Honshu; the grizzly bear of Yezo is not found in Honshu; the red pine of Honshu does not occur in Yezo. The climate is severe; the winter is long, and much snow falls, and lies on the ground for six months, and the shores are icebound for a long period. There is very little agriculture as the soil is unsuitable, but farming in a small way is carried on. Salmon is canned at Ishikari, and brewing is engaged in at Sapporo, where there are paper mills and glass works. The chief exports are canned salmon, dried fish roe, salt, sulphur, and fish oil. Pop. 1,459,424, including about 20,000 Ainus. See Japan.

Hokusai (1760-1849). Japanese painter. Born at Yeddo, he studied under the elder Shonsho, whose popular style he closely followed at first. He is known as the creator of popular Japanese genre, landscapes, flower paintings, etc.; his *kakemonos* have been eagerly sought by Western connoisseurs, though his own countrymen have never regarded him as an artist of the first rank. He died at Yeddo.

Holbach, PAUL HENRI THYRY (PAUL HEINRICH DIETRICH), BARON D' (1723-89). French materialistic philosopher. Born at Hildesheim in the Palatinate, he was brought up in Paris. Here he gathered round him distinguished men and philosophers — d'Alembert, Helvétius, Diderot, Grimm. His ideal was entire political and religious liberty. His *System of Nature*, the bible of materialism, published under the pseudonym of Mirabaud, disturbed by its outspokenness even Frederick the Great

and Voltaire, and terrified Goethe. According to Holbach, mind and matter, morality and natural philosophy, are identical; matter and movement, its inseparable companion, alone exist. All religions are equally harmful and unnecessary. Holbach died in Paris, Jan. 21, 1789. *Pron.* Olbak.

Holbeach. Urban dist. and market town of Lincolnshire, England. It is 8 m. E. of Spalding, on the M. and G.N. Jt. Rly. All Saints' Church is a fine example of the Late Decorated style, and the grammar school dates from 1669. Roman remains have been excavated. Holbeach Marsh, between the town and the Wash, has been reclaimed from the sea. Market day, Thurs. A state colony for ex-service men was established here in 1917. Pop. 5,260.

Holbeck. Parish of W.R. Yorkshire, England, within the borough of Leeds. It stands on the S. bank of the Aire, with stations on the Mid. and G.N. Rlys. See Leeds.

Holbein, HANS (c. 1460-1524). German painter. Born probably at Augsburg, Bavaria, he was influenced by, and possibly studied under, Martin Schongauer at Colmar. Until 1514 his home was Augsburg, but he was at Ulm in 1499 and Frankfurt in 1501, and died at Isenheim. Several of his religious compositions are at Augsburg. He was called the elder to distinguish him from his son, Hans Holbein the younger.



Hokusai. An illustration by the Japanese artist to a romance, drawn about 1795

Holbein, HANS (c. 1497-1543). German painter and engraver. Born at Augsburg, he was the son of Hans Holbein the elder, and brother of Ambrose and Sigmund Holbein, also painters, the former specially known as a designer for work in wood engraving. When the home at Augsburg was broken up in 1514, Holbein went to Basel, where he employed himself in preparing designs for title-pages and illustrations for the great printing firms. His earliest surviving painting, representing the Virgin and Child, was executed in the same year. In 1517 he carried out some wall decoration at Lucerne, but was back again in Basel in 1521, to which year belongs his decoration of the Rathaus. His two greatest religious pictures, each of them representing the Madonna and Child, belong to 1522 and 1526. The former is at Solothurn; the latter, now at Darmstadt, is one of his grandest compositions.

Holbein first came to England in 1526, bearing letters of introduction to Sir Thomas More, who received him with great consideration, and entertained him at his house. Then it was that he made the various sketches and studies for the important group representing Sir Thomas More and his family, which appears to be no longer in existence. Two years later he was back again in Basel, and there carried out some important commissions. He remained there for three years, returning then to England, where he settled down. One of the greatest portraits of this period was that of Thomas Cromwell, and it was probably the then Master of the Jewel House who presented Holbein to Henry VIII, for whom at once he became principal painter. To this same period belongs the portion of the cartoon for the decoration of the Palace of Whitehall, now preserved as one of the principal treasures of the duke of Devonshire. Holbein's pre-eminently important portrait of Christina duchess of Milan, now in the National Gallery, was painted in 1538, and soon after its completion he was back again, and for the last time, in Basel. He then returned to England, but was quickly sent abroad to paint the portrait of Anne of Cleves. Returning again to England shortly afterwards, he resided in the parish of St. Andrew's Undershaft, London, where, according to his will discovered in 1861, he died, probably of the plague, Oct.-Nov., 1543, not, as formerly supposed, in 1554.

Holbein was a marvellous draughtsman, and his designs for woodcuts, and for decoration, and

for objects to be executed by the goldsmith, are of the greatest possible beauty. In portraiture, he

excels in simplicity and in accuracy. The famous studies preserved at Windsor Castle, and representing the chief persons connected with the court of Henry VIII, are unequalled for the extraordinary simplicity with which they present the true portraiture. They are perhaps the simplest and most truthful portraits ever executed, and done with a rigid economy of line.

Holbein was perhaps the first man in England to paint what are now known as portrait miniatures, and the few which can be definitely attributed to him are marked by subtle delineation of character and exquisite draughtsmanship. His greatest paintings in England are those in the National Gallery, at Windsor Castle, Longford Castle, and Lambeth Palace, but some of his finest portraits can be seen at The Hague, in Berlin, Vienna, Paris, Munich, and Basel. His most notable miniatures are in the possession of the queen of Holland, the duke of Buccleuch, and J. P. Morgan of New York. Examples of his earlier work can be studied at Basel. See Anne Boleyn; Anne of Cleves; Art; Berners, Baron; Dance of Death; Elyot, Sir T.; Painting.

Bibliography. Life and Works of H. Holbein. R. N. Wornum, 1867; Holbein, H. Knackfuss, 1899; Hans Holbein the Younger, G. S. Davies, 1903; Hans Holbein the Younger, A. B. Chamberlain, 1913. Consult also the works of E. Law on the Paintings at Hampton Court Palace; Hanfstängel's reproductions of the Windsor Castle Studies; and the reproductions of Holbein's designs for woodcuts in various works.

Holbein, MONTAGUE A. British cyclist and swimmer. In 1882 he rode 100 m. on a safety bicycle in



Montague Holbein,
British athlete

5 hrs. 54 mins. 44 secs., and 337 m. in 24 hrs. Holbein became equally famous as a long distance



Hans Holbein,
German painter
After a self-portrait

swimmer, principally in connexion with his nine unsuccessful attempts to swim the Channel.

On Aug. 27, 1903, starting from Cape Gris Nez, he got within a mile of the English shore, when he had to be taken out of the water after swimming for 22 hrs. 21 mins. On June 30, 1908, he swam 50 m. in the Thames in 13 hrs. 47 mins.; starting from Blackwall Point to Gravesend Reach, returning up stream to Deptford and landing at Woolwich Arsenal pier. Holbein continued his Channel attempts until 1911, the year T. W. Burgess accomplished the feat. He was the author of *Swimming*, 1903, and *Everybody's Book on Training and Health Development*, 1904.

Holberg, LUDVIG, BARON AF (1684-1754). Danish writer. Born at Bergen, Norway, on Dec. 3, 1684, he was educated there and at Copenhagen University. He travelled widely in Germany, Holland, and Scandinavia, and, coming to England, spent over a year in Oxford. 1706-7, where he supported himself



Ludvig Holberg,
Danish writer

by teaching music. Returning to Copenhagen, he became an honorary professor at the university, but set out travelling again, visiting Paris and Rome. He came

back in 1716, and two years later became professor of metaphysics, and, in 1720, of public eloquence.

In 1719 a new chapter of his varied life opened with the publication of the famous mock-heroic poem, *Peder Paars*, a brilliant satire on the pedantries and conventions of his day, and he went on to devote his energies to the drama. He directed the newly founded Danish theatre at Copenhagen from 1722-27, producing in rapid succession a large number of comedies, which have earned for him the title of the "Molière of Denmark."

The third phase of Holberg's life was spent in producing a large variety of historical, biographical, and philosophical works, marked by their good style no less than by the extraordinary versatility of their author. In recognition of his invaluable services to Danish vernacular literature of which he is generally counted as the founder, he was created baron in 1747. His activity continued almost to his death, which occurred at Copenhagen, Jan. 28, 1754. See *Denmark: Literature*; consult also *Life*, Georg Brandes, 1884.

Holborn. Parl. and mun. bor. and district of London. The bor. covers 405 acres and extends from Tottenham Court Road on the W. to Farringdon Road, E., mainly N. of New Oxford Street and High Holborn. Near Staple Inn two obelisks mark the site of Holborn Bars, destroyed in 1867, indicating the W. boundary of the city. The main road formed part of the old way from the Tower and Newgate to Tyburn.

The district includes the British and Soane Museums, Lincoln's Inn, Gray's Inn, Staple Inn, the sites of Barnard's Inn (since 1894 occupied by the Mercers' schools), Furnival's Inn, and Thavie's Inn; the churches of S. Alban (1858), S. Andrew (1686), S. George, Bloomsbury (1731), S. Giles-in-the-Fields (1731-33), and the 14th century chapel of S. Etheldreda; the famous Hospital for Sick Children; Bedford, Russell, Queen, and Red Lion Squares; Hatton Garden and Saffron Hill; and



Holborn, London. Old houses at Staple Inn, dating from Elizabethan days, restored in 1886

stations on the S.E. & C.R. and two tube rlys. The council has handsome buildings in High Holborn, which in 1908 took the place of the town hall in Gray's Inn Road, now a Primitive Methodist centre.

Holborn Viaduct, 1,400 ft. long and 80 ft. wide, including an iron bridge of 107 ft., was constructed in 1867-69, at a cost of £1,571,000, to carry the roadway over the valley of the Holbourne, part of the Fleet (*q.v.*), whence Holborn derives its name. On the viaduct is the City Temple (*q.v.*). Holborn, which had as its first mayor, in 1900, the 11th duke of Bedford, contains many large business premises; it returns one member to Parliament. Pop. of bor. 42,796. See Farringdon Street, London.

Holbrook, NORMAN DOUGLAS (b. 1884). British sailor. In the submarine branch he served in the



N. D. Holbrook.
British sailor
Russell

the Turkish battleship *Messudiyeh*. Pursued by heavy gunfire and chased by torpedo boats, he returned safely, having on one occasion been submerged nine hours. For this action he was awarded the Victoria Cross, the first awarded to the Navy in the Great War.

Holbrooke, JOSEF CHARLES (b. 1878). British composer. Born at Croydon, July 6, 1878, he studied at the Royal Academy of Music, and became a pianist and then a conductor. In 1901 he produced his tone poem *The Raven*, and during the next fifteen years wrote a vast number of popular musical works.

These included five operas, more than a hundred songs, and much chamber and orchestral music. He is a composer of distinctly modern tendencies, which have been revealed chiefly through the medium of the orchestra.

Holcroft, THOMAS (1745-1809). English dramatist and novelist. He was born in Orange Court, Leicester Fields, London, Dec. 10, 1745, the son of a shoemaker and jobmaster. After a chequered early



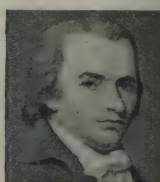
Holborn Viaduct, London, constructed in 1867-69

life, at one period of which he had a situation in the household of Granville Sharp, he became connected with the stage, and his first novel, *Alwyn, or the Gentleman Comedian*, 1780, embodies many of his own experiences. In the following year appeared his first play, *Duplicity*. He wrote four novels in all, and wrote, translated, or adapted some thirty plays. The most notable of the latter is *The Road to Ruin*, 1792. He died in London, March 23, 1809.

Holda. Goddess of Teutonic mythology. Represented as benignant and merciful, she is a familiar figure in German popular legends and nursery tales. She is regarded as a being of the sky, and when it snows is said to be making her bed so that the feathers fly. She drives about in a wagon, and is the goddess of spinning, of agriculture, and household order.

Holden, SIR EDWARD HOPKINSON (1848-1919). British banker. Born in Manchester, May 11, 1848, he entered the Manchester County Bank as a junior clerk in 1866. Having studied economics at Owens College, in 1881 he became accountant to the Birmingham and Midland Bank, and, rising rapidly, became general manager. In 1891 his Birmingham bank took over the Central Bank of London. In 1898 the City Bank was absorbed, and it became known as the London, City and Midland Bank (*q.v.*); of this organization Holden was made managing director, and later chairman of the board in addition, and to the end he was the guiding spirit of the huge concern.

One after another other banks were taken over, until in 1918 the London Joint Stock Bank was incorporated, and the organization became the largest in the country. From 1906 to 1910 Holden was M.P. for the Heywood division of Lancashire, but made little mark in the House. In his later years, however, he was the leading figure in the banking world of London, and his annual addresses to the shareholders, wide and careful surveys of the general financial and



Thomas Holcroft,
English dramatist



Sir Edward Holden,
British banker
Elliott & Fry

economic conditions, were read with universal interest. In 1909 he was made a baronet. He died July 23, 1919, leaving two sons.

Holden, Sir Isaac (1807-97). British manufacturer. Born at Hurlet, near Paisley, May 7, 1807,



Sir Isaac Holden, British manufacturer

his father was a miner who had migrated from Cumberland. Having managed to educate himself in his spare time, he became a teacher in Paisley in 1823, and later in Leeds.

His connexion with the woollen trade began in 1830, when he secured an appointment as book-keeper to a firm at Cullingworth, Yorkshire. He invented a wool-combing machine, which proved the foundation of his fortune. He was joined by Samuel C. Lister, afterwards Lord Masham, but after a few years each developed his own business. Holden founded the firm of Isaac Holden & Sons, a wool-combing concern at Bradford with a factory in France. In 1865 he was elected Liberal M.P. for Knaresborough, for which place he sat until 1868. From 1882-85 he was M.P. for the W.R., Yorkshire, and from 1885-95 for Keighley. He was made a baronet in 1893, and died Aug. 13, 1897. His son, Sir Angus Holden, was made Baron Holden of Alston in 1908.

Holder. In banking, any person in possession of a bill who holds it either as payee, indorsee, or bearer. (See Bill of Exchange.)

Generally the word is used for any contrivance in which something is held or secured. In engineering, the adjustable clamp for holding the armature brushes of dynamos and motors is called a holder, and many other clamps in electrical work are known by the term. Either of the two loops attached to the reins for holding a pulling horse is a holder.

Holderness. Parl. division and wapentake of the E. Riding of Yorkshire, England. It is the most S.E. portion of the county, lying N. of the Humber, and terminating in Spurn Head, and contains the towns of Beverley, Hedon, Hornsea, and Patrington. The division returns one member to Parliament. Here in 1916 the Government established the first farm colony for ex-soldiers. Pop. 45,410.

Holderness, Earl of. English title now extinct. Its first holder was John Ramsay (c. 1580-1626), a Scotsman, who in 1621 was made an English peer by James I.

The peerage became extinct on his death in 1626. Revived in 1644, it was given to Prince Rupert, and on his death in 1682 to Conyers Darcy (1599-1689), who belonged to an old Yorkshire family, holders of the baronies of Conyers and Darcy. There were four earls of this line. Robert, the 4th earl (1718-78), was ambassador at Venice and The Hague; afterwards he was secretary of state, 1751-61. He died without sons, his estates passing to his daughter, wife of Francis Osborne, 5th duke of Leeds. The earl's chief seat was Hornby Castle, Bedale, now the property of the duke of Leeds.

Holdich, Sir Thomas Hungerford (b. 1843). British geographer. Born at Dingley, Northants, Feb.



Sir Thomas Holdich, British geographer

Russell

13, 1843, he was commissioned in the Royal Engineers in 1862. He served with the Bhutan expedition in 1865, and in Abyssinia in 1867, took part in the Afghan War of 1878-80, and, after service in various frontier campaigns, was appointed superintendent of frontier surveys in India, 1892-98. Knighted in 1897, he was H.M. commissioner for the Argentina-Chile boundary, 1902-3, and was president of the Royal Geographical Society in 1917. He wrote papers on military survey and geographical subjects, and various books of travel, including *The Gates of India*, 1910.

Holding. Term used in Great Britain in the Agricultural Holdings Acts. It signifies a farm, or land with or without buildings, principally or mainly used for purposes of agriculture or market gardening. See *Agricultural Holdings Act*.

Holding over. Term of English law. It means keeping possession of land by a tenant after his tenancy has legally expired. If a tenant holds over after he himself has given notice to quit, he is liable to pay double the rent. If he holds over after the landlord has given him notice to quit, he is liable to pay double the value of the premises, but there must be a notice in writing by the landlord or his agent demanding the giving up of the premises. See *Landlord*.

Hole, Samuel Reynolds (1819-1904). British divine. Born at Ardwick, Lancashire, Dec. 5, 1819, he was the son of a brewer, who was also the squire of Caunton, near Newark. From Newark Grammar School Hole went to

Brasenose College, Oxford. He was ordained in 1844, and was first curate, and then vicar, of Caunton, and squire of the place. In 1887 he accepted the post of



Samuel R. Hole, British divine
Elliott & Fry

dean of Rochester, where he died Aug. 27, 1904. Hole was a fine example of the muscular Christian and sporting parson. He played cricket, rode to hounds, and took part in almost every

form of physical activity; he was intimate with John Leech, and others of the Punch circle. He had also a high reputation as a rose grower, and his most popular book is *A Book about Roses*, 1869. His *Memories*, 1892, and *More Memories*, 1894, are full of good stories. He also wrote *A Little Tour in Ireland*, 1859, illustrated by Leech, and *A Little Tour in America*, 1895.

Hole, William (1846-1917). British painter and etcher. Born at Salisbury, Nov. 7, 1846, he started life as a civil engineer, but adopted art as a profession in 1870, and, having removed to Edinburgh, studied at the schools of the R.S.A. Jacobite subjects and modern Scottish genre first occupied him in painting; at the same time he developed original and reproductive etching. He executed important mural paintings in the National Gallery and Municipal Buildings, Edinburgh. He became A.R.S.A., 1878, and full member, 1889. He died Oct. 24, 1917. A memoir by his wife was published in 1920. See *Columba, S.*

Holguin. City of Cuba. It is situated 65 m. N.W. of Santiago de Cuba, and 15 m. S. of Gibara, its port, with which there is rly. communication. Corn, timber, tobacco, and cattle are exported, and sugar is grown in the district. It was founded in 1720, and became a city in 1751. Pop. 7,600.

Holiday. Day of freedom from work. The word, derived from holy day or festival of the Church, implies usually a time given up to individual or collective enjoyment, gaiety, and pleasure. The period of freedom from work, more particularly in the summer time, known as holidays, is sometimes called a vacation, especially where the law courts, schools, and colleges are concerned. See *Bank Holiday*.

Holinshed, Raphael (c. 1520-80). English chronicler. He was employed as translator by Reginald Wolfe, printer to Queen Elizabeth. Wolfe planned a universal

cosmography, and when he died Holinshed became responsible for the modified form in which it appeared (in two folio volumes), in 1577, as *The Chronicles of England, Scotland, and Ireland*. Holinshed had as assistants William Harrison, Richard Stanyhurst, and others. A second edition, in three folio volumes, appeared in 1587, and there was a reprint in six volumes in 1807-8. The work, familiarly known as *Holinshed's Chronicles*, was used by Shakespeare for his historical plays. See *Elizabethan England*, Lothrop Withington, 1889; *Shakespeare's Holinshed*, W. G. Boswell Stone, 1907.

Holkham Hall. Seat of the earl of Leicester in Norfolk. It is a great 18th century Palladian house built of white brick. Kent was the architect, and it was erected by Thomas Coke, 1st earl of Leicester. It contains some fine rooms, especially the picture gallery. The estate was bought in 1659 by John Coke, a son of the lawyer, Sir Edward Coke. It is famous in the his-

Joseph Chamberlain, 1888. He died July 31, 1888.

Holl, WILLIAM (1771-1838). British engraver. Taught his trade by Benjamin Smith, he made a speciality of portrait work, and was largely employed by Lodge in his *Portraits*, 1821. His son William (1807-71) was a steel engraver of considerable merit. He worked for Lodge and engraved pictures by Frith, Baxter, Faed, Richmond, Goodall, and others. He died in London, Jan. 30, 1871.

Holland. Linen fabric used as material for dresses, aprons, blinds, etc. The name "Holland cloth" was originally given to linen made or bleached in Holland. Formerly holland was of very fine texture; in 1745 Daniel Defoe, inveighing against the extravagance of the times, includes holland among articles "requiring the regulation of a sumptuary law." See *Linen*.

Holland. Country of Europe, the nucleus of the kingdom of the Netherlands. The name means

with the counts of Flanders or the bishops of Utrecht. In 1345 the county line again became extinct; eventually the county was secured by William, a Bavarian prince.

In the 14th century the land was troubled by civil war between the so-called Hooks and Cods, into which Edward III of England, whose wife had claims on Holland, was drawn. William's brother, Albert, ruled well for many years and then came the latter's son, who, dying in 1417, left an only child, Jacqueline, already a widow. Ringed with foes, she struggled hard to preserve her inheritance, but in the end she was obliged to cede Holland and Zeeland to Philip the Good of Burgundy.

Holland and Zeeland passed with the rest of the Burgundian lands to Mary, the daughter of Charles the Bold, and then to her son Philip, a member of the Hapsburg family. Philip's successor was his son, Charles V, and then came Philip II of Spain. Against Philip, Holland and the northern provinces of the Netherlands revolted. Holland and Zeeland were united more closely and round them was formed the union of Utrecht, the seven provinces that threw off the sovereignty of Spain and were later recognized by Europe as the Dutch republic. The title of count of Holland was borne by William the Silent. See *Netherlands*.

Holland, NORTH. Prov. of Holland. It embraces the flat, low-lying country between the N. Sea and the Zuider Zee, and marches S. with Utrecht and S. Holland. Large tracts lie over 10 ft. below sea level, protected by the dunes on the W. coast and by dykes, e.g. the Helder dyke. The capital is Haarlem (*q.v.*), but Amsterdam is the largest town, others of note being Helder-Nieuwedorp, Alkmaar, Zaandam, Hoorn, Enkhuizen, and Purmerend. The prov. is traversed by the Noord Hollandsch and Noord Zee canals and by other lesser waterways. The Purner and Beemster are *polders*, or reclaimed marshes. Agriculture is the main economic feature, cattle-raising being specially important. The prov. was formerly part of W. Friesland, and sends nine members to the first chamber. Area, 1,066 sq. m. Pop. 1,278,330. See *Netherlands*.

Holland, SOUTH. Province of Holland. Adjoining N. Holland, Utrecht, and N. Brabant, it includes the islands of the Rhine-Maas delta, Voorne-Putten, Beijerland, Goeree, Over Flakkee, Ysselmonde, etc. The prov. has The Hague as capital, other important towns being Rotterdam,



Holkham Hall, Norfolk. The seat of the earl of Leicester seen from the park

tory of agriculture because here Coke's nephew and successor, the earl known as Coke of Norfolk, carried out his experiments, which immensely increased the rental of his estate. The village, which has an old church with a lofty tower, is on the coast, 2 m. from Wells. It was once a port and market town. *Pron.* Ho-kum.

Holl, FRANCIS MONTAGUE (1845-88). British painter. Son of Francis Holl, the engraver, he was born



Francis M. Holl, British painter

in London, July 4, 1845, and studied at the R.A. schools. Subject pictures of modern life, rather sombre in sentiment, at first occupied him, but in 1878 he exhibited a portrait of Cousins, the engraver, and its success was the beginning of ten years' great popularity as a portrait-painter. His sitters included the duke of Cambridge, 1883; Lord Wolseley, 1883; John Bright, 1887; Gladstone and

lowland and was first used in 1604. It was given to a county that arose on the ruins of the Carolingian empire and was included in the Holy Roman Empire.

This county had its own rulers from about 920, though it was not until nearly two centuries later that they were called counts of Holland. Many of them were named Dirk, while Floris was another name among them, and like their contemporaries their time was mainly passed in fighting. In general they were successful, the result being that Holland grew from a small district round Dordrecht to one including all the land between the Texel and the Maas.

In 1299 the line of the counts became extinct, and the county passed to John, a descendant in the female line. He was also count of Hainault and from his time that county was united with Holland. He had some trouble in establishing himself, but he succeeded, and his son William was recognized as ruler also of the district around Amsterdam and part of Zeeland, the earlier counts having disputed the lordship of these possessions

Dordrecht, Leiden, Delft, Gouda, and Schiedam. The various branches of the lower Rhine, the Waal, Yssel, Lek, and Oude Rijn, flow through the prov., forming with the numerous canals a maze of waterways. The country is well cultivated. Area, 1,131 sq. m. Pop. 1,648,570. *See* Netherlands.

Holland. City of Michigan, U.S.A., in Ottawa co. It stands on Black Lake or Macatawa Bay, 26 m. S. of Grand Rapids, and is served by the Père Marquette rly. Industries include flour-milling, tanning, planing, and the manufacture of machinery, furniture, pickles, beet-sugar, and biscuits. Holland was settled by the Dutch in 1847. In 1871 it was almost entirely destroyed by fire. Pop. 11,640.

Holland, BARON. English title borne, 1763-1859, by the family of Fox. Its founder was Sir Stephen Fox (*q.v.*). In 1763 his younger son, Henry, was made Baron Holland; he was able to amass great wealth, especially when paymaster-general. In 1767 Lord Holland bought the residence he named Holland House. His eldest son, Stephen, succeeded to the title, but it was a younger son, Charles James, who made the name of Fox illustrious and became the idol of the Holland House circle. In 1774 Stephen's son, Henry Richard Vassall Fox, became the 3rd baron, and the title became extinct when his son, Henry Edward, died in 1859.

Holland, HENRY Fox, 1st BARON (1705-74). British politician. The younger son of Sir



1st Baron Holland,
British politician
After Reynolds

Stephen Fox, he was born at Chiswick, Sept. 28, 1705. Educated at Eton, he entered Parliament in 1735 for Hindon, in Wiltshire, becoming a follower of Walpole. In 1746 he was made secretary at war.

He joined Pitt in attacking certain members of Newcastle's ministry, of which, however, he remained a member, and he was one of the group who controlled, by cynical arrangements among themselves, the affairs of state about this time. In 1755 Fox became secretary of state and the principal colleague of Newcastle, but in 1757 he retired and was made paymaster-general. In 1762 he was again leader of the House of Commons as he had been under Newcastle, but in 1763 Bute got rid of him. He was then made a baron, and he died July 1, 1774.

Holland, HENRY RICHARD VASSALL FOX, 3RD BARON (1773-1840). British politician. Son of the 2nd



3rd Baron Holland,
British politician
After C. R. Leslie, R.A.

baron, he was born at Winterslowe, Wiltshire, Nov. 2, 1773, and was educated at Eton and Christ Church, Oxford. In 1774 he succeeded to the title and, influenced by his uncle, Charles James Fox, began his career as a Whig politician. In 1806 he entered the Cabinet as lord privy seal, but retired on the fall of the government in 1807. He served the Whig cause steadily during the long years of Tory rule, and in 1830, when the Whigs triumphed, was made chancellor of the duchy of Lancaster. He held that post, with two short intervals, until his death, at Holland House, Oct. 22, 1840.

Holland married Elizabeth Vassall, and took the name of Vassall. This lady was first the wife of Sir Godfrey Webster, Bart., from whom she was divorced in order to enable her to marry her lover. The pair made Holland House a great social centre. Lord Holland wrote *Memoirs of the Whig Party, 1852*, and other books. Lady Holland died in 1845, and in 1908 her *Journal*, edited by the earl of Ilchester, appeared. *See* The Holland House Circle, Lloyd C. Sanders, 1908.

Holland, SIR ARTHUR EDWARD AVELING (b. 1862). British soldier. Born April 13, 1862, he joined the



Sir A. E. A. Holland,
British soldier
Russell

army in 1880 as lieutenant in the artillery. He served in Burma, 1885-89, and in the S. African War, 1900. He was appointed to the staff in Malta, 1903-5, and was A.M.S. at the War Office, 1910-12. From Sept., 1912, to Sept., 1914, he was commandant of the Royal Military Academy, Woolwich. He served during the Great War, rising to the rank of lieutenant-general, and in 1918 was in command of the 1st corps. He was knighted in 1918.

Holland, SIR HENRY (1788-1873). British physician. Born at Knutsford, Oct. 27, 1788, he was related to Mrs. Gaskell and Charles Darwin. He was educated at private schools and, after a time passed in business in Liverpool,

went to Edinburgh to study medicine. Then he graduated, and in 1816 began to practise in London. He became physician to Queen Victoria, was made F.R.S., and in 1853 a baronet. A great traveller, he wrote *Travels in the Ionian Islands, Albania, Thessaly, and Greece, 1815*. He died Oct. 27, 1873. Sir Henry married a daughter of Sydney Smith, and his eldest son became Viscount Knutsford (*q.v.*). *See* his *Medical Notes and Reflections, 1840*; and *Recollections of Past Life, 1872*.



Sir Henry Holland,
British physician

Holland, HENRY SCOTT (1847-1918). British divine. Born near Ledbury, Jan. 27, 1847, he was



H. Scott Holland,
British divine
Elliott & Fry

educated at Eton and Balliol College, Oxford, afterwards becoming a senior student of Christ Church and tutor there for twelve years. Greatly influenced by Liddon, Holland was ordained in 1872 and soon became known as a powerful preacher, especially after 1884, when he was appointed canon of S. Paul's. He remained there, after the deaths of Church and Liddon, until made regius professor of divinity at Oxford in 1910. Holland was an advanced Liberal in politics. He wrote a *Life of Jenny Lind, 1909*, and *A Bundle of Memories, 1915*. He died at Oxford, March 17, 1918. *See* A Forty Years' Friendship, Letters from Henry Scott Holland to Mrs. Drew, ed. S. L. Ollard, 1919; Henry Scott Holland: Some Appreciations, C. Cheshire, 1919; Henry Scott Holland, Memoir and Letters, S. Paget, 1921.

Holland, SIR THOMAS ERSKINE (b. 1835). British jurist. Born July 17, 1835, the son of a Sussex



Sir T. E. Holland,
British jurist
Russell

clergyman, he was educated at Brighton College and Balliol College, Oxford. He became a barrister and a fellow of Exeter College, and soon made a reputation as a

student of jurisprudence. In 1874 he was appointed Vinerian reader in English law at Oxford; in the same year he became professor of international law and diplomacy. He held the post until 1910. Knighted in 1917, he was a fellow of the British Academy. Holland's great work is *The Elements of Jurisprudence*, which appeared in 1880. He also wrote *Studies in International Law*, 1898, and *The Laws of War on Land*, 1908.

Holland House. Historic London mansion. It stands in its own grounds, Holland Park, between Kensington Road and Uxbridge Road, in the parish of Kensington (*q.v.*). It is a notable example of Jacobean architecture, and, when Macaulay wrote his essay on Addison, 1843, could "boast of a greater number of inmates distinguished in political and literary history than any other private dwelling in England." The centre building and turrets, 1607, were built by John Thorpe for Sir Walter Cope. The house, formerly known as Cope Castle, was extended for the 1st earl of Holland, husband of Cope's daughter.

Here, in 1719, died Joseph Addison, three years after his marriage to the widow of the 3rd earl of Warwick and Holland. The house was bought by Henry Fox, who was created Baron Holland in 1763, and on the death of Lady Holland, widow of the 4th baron, in 1889, the property passed by purchase to the earl of Ilchester, a descendant of Henry Fox's brother. In the time of the 3rd Baron Holland and his brilliant if imperious wife, Holland House became a social and political *salon* and the headquarters of the Whigs.

A statue of the 3rd Baron Holland, by G. F. Watts, is in the grounds facing Kensington Road. The house contains many valuable pictures and historical relics. In Holland Park in 1804 Lord Camelford was mortally wounded in a duel with Col. Best. *See* Holland House, Princess Lichtenstein, 1874; Macaulay's *Essay on Lord Holland*, 1841; *The Holland House Circle*, Lloyd C. Sanders, 1908.

Holland Park. District between Notting Hill and Kensington, London, W. With a number of the adjacent thoroughfares and the station of the C.L.R., it takes its name from the park containing Holland House. At No. 12 (N. side), Holland Park Road, just N. of Kensington Road, is Leighton House, long the residence of Lord Leighton; it was presented to the nation by his sisters.

Hollands. Variety of gin sometimes called Schiedam or Schnapps. It is manufactured near Schiedam in Holland, from barley, malt, and rye. *See* Gin.

Hollandsch Diep. Arm of the Meuse estuary, Holland. It runs between the coast of the Land van Strijen and the N. Brabant coast to the E. of Willemstad. It is in effect a continuation of the Haringvliet and Kramer-Volkerak arms, and runs up towards the delta of the Biesbosch (*q.v.*). Its entrance is defended by two shore forts.

Hollar, WENCESLAUS (1607-77). Bohemian engraver. Born at Prague, July 13, 1607, he studied under Matthew Merian. After spending some time at Frankfurt, Cologne, and Antwerp, he came under the notice of the earl of Arundel, English ambassador to Germany. Brought to England by his patron, he was appointed drawing-master to the prince of Wales (afterwards Charles II); and at the outbreak of the Rebellion fought for the royalists. He afterwards escaped to Antwerp, but returned in 1652, and in 1660 was made draughtsman to the king.

After the Great Fire of 1666 he engraved a map of London, leaving the burnt portions blank. Loss of employment, and his own extravagance, made him poor, and he died a bankrupt, March 28, 1677. His views of towns, by which he is chiefly known, include those of Oxford, Cambridge, Hull, Richmond, Greenwich, old and new London, and a number of German towns. *See* Becket, T.; Geddes, J.



Wenceslaus Hollar.
Bohemian engraver

From a print

Hollebeke. Village of Belgium, in the prov. of W. Flanders. It stands 4 m. S.E. of Ypres. It was prominent in the fighting in the

Ypres salient during the Great War. Fighting took place here in Oct.-Nov., 1914, where the 2nd and 3rd cavalry divisions were holding the line. It passed into the possession of the Germans, and was taken by the British 41st division, July 31, 1917. *See* Ypres, Battles of.

Holles, DENZIL HOLLES, 1st BARON (1599-1680). English politician. A younger son of John Holles, 1st earl of Clare, he was born Oct. 31, 1599, and educated at court with Prince Charles, afterwards Charles I. In 1624 he entered the House of Commons as M.P. for St. Michael, and in March, 1629, being then M.P. for Dorchester, he was one of those who held the Speaker down in the chair while he asked members to approve of the resolutions of protest to the king. For this he was imprisoned and fined, but shortly afterwards he made his escape abroad. After an absence of some years, he took part in opposing the collection of ship money, and was a member of Parliament when it was called together again in 1640. Holles had a hand in most of the great events that preceded the outbreak of war. He was one of the Five Members (*q.v.*) and also a member of the committee of safety.

When war began Holles raised a regiment and fought at Edgehill and Brentford, but he was not very desirous of pressing the appeal to arms. He is next found as the chief opponent of Cromwell and the army, for which he was impeached. He sat in Parliament in 1659, and went to The Hague to invite the king to return. In 1661 he was made a peer. From 1663 to 1666 he was ambassador in Paris; in 1667 he arranged with Holland the treaty of Breda. Later he took up an attitude of opposition to Charles, acting with Shaftesbury. He died Feb. 17, 1680. The title became extinct when his grandson, the 3rd baron, died in 1694, and the family is now represented by the duke of Newcastle (*q.v.*).

Hollingshead, JOHN (1827-1904). British journalist and theatrical manager. Born in Hoxton, London, Sept. 9, 1827, he had a brief experience of business and then began to contribute to the magazines, notably *Household Words*. He was a voluminous writer for many years, and assisted many public movements with his



1st Baron Holles,
English politician



Holland House, London. The Jacobean mansion seen from the garden

pen, such as that for the better government of London, and the agitation for copyright reform. After



John Hollingshead,
British theatrical
manager
Elliott & Fry

three years as stage director of The Alhambra, where he introduced some much-needed reforms, in 1868 he became manager of the Gaiety Theatre in the Strand, where he had many successes in various forms of the drama. He died Oct. 10, 1904. See *My Lifetime*, 1895, and *Gaiety Chronicles*, 1898.

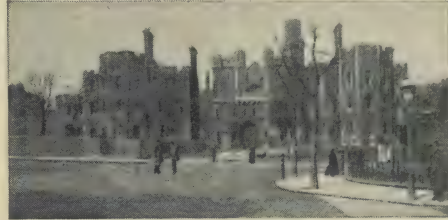
Holloway. Name of two wards, Upper and Lower Holloway, in the met. bor. of Islington, London, N. The district includes the Great Northern Central Hospital, 1856, rebuilt 1892, and enlarged 1909; the Caledonian (Metropolitan Cattle) Market, 1855, enlarged 1907; Pentonville prison, 1840-42; the Athenaeum, 1871; Northern Polytechnic, opened 1897; and two hosteries of note, the Brecknock Arms, at the junction of Camden and Brecknock Roads, and the Nag's Head, at Holloway Road corner of Seven Sisters Road.

Holloway prison, a castellated structure built in 1853-54, has accommodation for 1,000 prisoners, mostly women serving short sentences. Women sentenced in connexion with the suffrage agitation before the Great War were sent to Holloway prison, where they went on hunger strike (*q.v.*) and had to be forcibly fed by the medical officers. Their supporters demonstrated outside the prison.

Upper Holloway Baptist Chapel, long associated with the ministry of the Rev. J. R. Wood, was built in 1866. Islington's first public library was opened in 1906 in Manor Gardens. There are stations on the Midland, G.N., and Piccadilly (Tube) Rlys., and continuous bus and tram services. Holloway suffered damage from air raids during the Great War. See *Air Raids*.

Holloway, THOMAS (1800-83). Patent medicine maker. Born at Devonport, Sept. 22, 1800, the son of a Plymouth baker, he came to London in 1828, and nine years later concocted an ointment and a pill which he advertised extensively. His success was largely due to the fear-

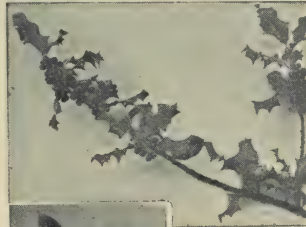
lessness with which he spent large sums of money in advertising, a business medium then but little appreciated. He acquired a handsome fortune, and, on Lord Shaftesbury's advice, set aside a large sum of money to found a sanatorium, which was opened at Virginia Water in 1885. He also founded the Holloway College, and formed a picture gallery on which he spent more



Holloway. The prison in Camden Road, sometimes called Holloway Castle

than £83,000. He died at Tittenhurst, Berkshire, Dec. 26, 1883.

Holloway College. British college for the higher education of middle-class girls. It was founded in 1883 by Thomas Holloway, at a cost of £600,000. Built in the French Renaissance style at Mount Lee, Egham, Surrey, near Virginia Water, it was opened by Queen Victoria in 1886. It accommodates about 350 students, who



Holly. Leaves and berries of *Ilex Hendersonii*. Top, leaves and berries of the British species

Holly (A.S. *holen*, *holeyn*). Hardy evergreen tree of the natural order Aquifoliaceae, and genus *Ilex*. *Ilex aquifolium* is a native of Britain, but foreign species were introduced from N. America as far back as the year 1726. The leaves are usually spiny and dark

green, though there are smooth and variegated sorts, and the red or yellow berries are borne in winter. Hollies should be planted in late spring and early autumn, while the soil is still warm. Any ordinary soil is suitable, provided the young plants are put in deeply, so that the roots are adequately protected against frost. Holly makes one of the best hedges, but

it is of slow growth, and needs constant clipping, and occasional drastic pruning, to keep it within bounds. Hollies are increased by taking the berries of any desired varieties when ripe, just before Christmas, burying them in sand for twelve months,

and then planting them in the open, transplanting the young trees three years afterwards. *I. paraguayensis*, which yields maté, or Paraguay tea, needs greenhouse treatment, in loam and sand.

Hollyhock (med. Eng. *holihok*, holy hock or mallow) (*Althaea rosea*). Hardy perennial herb of the natural order Malvaceae. A native of China, it was introduced in 1573. The leaves are large, rough and rounded, and it bears a single spike (8 ft. to 10 ft.) of white, pink, yellow, or purple flowers, either single or double. Its height makes it very suitable for hiding an ugly wall or fence in the hardy herbaceous border, and it will thrive in any soil that is not too light. By planting deeply and fertilising liberally with nitrate of soda in the height of summer, a profusion of bloom and a variety of "sports" or varying colours are readily obtainable. These new varieties are best propagated from seed gathered after the flower stems have died down, and planted in a temperature averaging 55° in



Hollyhock, leaves and flowers; bottom, right, the "cheese" containing seeds, and a single seed



Thomas Holloway,
Patent medicine
maker

Jan. or Feb., planting out in May for summer flowering. If left undisturbed for three or four seasons they may produce an interesting variety of self-sown plants of both single and double sorts.

Holman, JAMES (1786-1857). British traveller. The son of a chemist, he was born at Exeter, Oct. 15, 1786, served in the navy, 1798-1810, and had reached the rank of lieutenant when he became totally blind. A man of remarkable strength of will, he studied for a time at Edinburgh University, and in 1812 was made a naval knight of Windsor. Obtaining leave to travel, he visited France, Italy, Savoy, Switzerland, Germany, and Holland, 1819-21; Russia, Siberia, where he was arrested as a spy, Poland, Austria, Saxony, Prussia, and Hanover, 1822-24; made a voyage round the world, 1827-32; and then travelled in Spain, Portugal, S.E. Europe, Syria, and Turkey. He published three accounts of his wanderings, and was preparing a book on his later journeys when he died in London, July 29, 1857, leaving his MSS., which remain unprinted, to a friend. He was a F.R.S.

Holman, JOSEPH GEORGE (1764-1817). British actor and dramatist. The son of an army officer, he was born in Aug., 1764, and educated at Queen's College, Oxford. He made a highly successful début at Covent Garden, Oct. 25, 1784, as Romeo. After three seasons he severed his connexion with Covent Garden and went to Dublin and Edinburgh. In 1812 he left England for the U.S.A., where he met with great success. He died at Long Island, Aug. 24, 1817. He was twice married, his first wife (d. 1810) being a granddaughter of the duke of Hamilton. As an actor he was for a time a rival of John Kemble, and won appreciation from Lamb and Macready, his successes including Hamlet and Colonel Townley. His plays belong to the school of Holcroft, and are now negligible.

Holman, WILLIAM ARTHUR (b. 1871). Australian politician. Born in London, he went to Australia in



W. A. Holman,
Australian politician
Russell

1888, and as a journalist edited *Vedette*, 1895-98. In 1898 he entered the N.S.W. legislative assembly. He studied law, and was called to the bar in 1903, and became attorney-general in the McGowen state ministry, 1910-13. In 1916 Holman became premier of N.S.W. and leader of the labour party in that state. The extremists of the party hindered the successful prosecution of the state's activities in connexion with the Great War, and a crisis arose on conscription. After the adverse decision on the latter Holman and W. M. Hughes were expelled from the labour party.



Holme Lacy, Herefordshire. The east front of the 17th century house

In Dec., 1916, Holman led a new national party, and was returned with a large majority at the N.S.W. state elections held March, 1917, and again became premier. He visited England and France in 1917, and narrowly escaped death while visiting the trenches with General William Holmes (q.v.). As the result of his defeat at the state elections in March, 1920, he announced his intention of giving up politics for the law.

Holmby House. Name of a Northamptonshire mansion. The existing Holmby (or Holdenby) House was built in the 19th cent., its predecessor being one of the great 16th cent. domestic palaces. Here James I is said to have stayed, and Charles I was forcibly detained for some months after his surrender to the Scots at Newark-on-Trent. Holmby House boasted a larger frontage even than Blenheim Palace and Castle Howard,

its main façade measuring no less than 360 ft. The only remains of the original building are two archways and part of the north side of the second quadrangle.

Holme Cultram. Urban dist. and parish (Holme Abbey) of Cumberland, England. It stands on the Waver, 5 m. N.W. of Wigton. The church of S. Mary occupies the site of a 12th cent. Cistercian abbey, and was restored in 1885. Among the monuments is the tomb of Robert Bruce, father of the Scottish king of that name. Farming implements are manufactured. The council has erected a sea-wall for the protection of the road between Silloth and Skinburness. Pop. 4,494.

Holme Lacy. Parish and village of Herefordshire, England. It stands on the Wye, 5 m. S.E. of Hereford, on the G.W.R. Holme Lacy House, formerly the seat of the Seudamores and more recently of the earl of Chesterfield, is a fine 17th cent. building containing a splendid collection of pictures and some excellent wood-carvings by Grinling Gibbons. In the Norman church, dedicated to S. Cuthbert, are noteworthy monuments of the Seudamore family. Pop. 263.

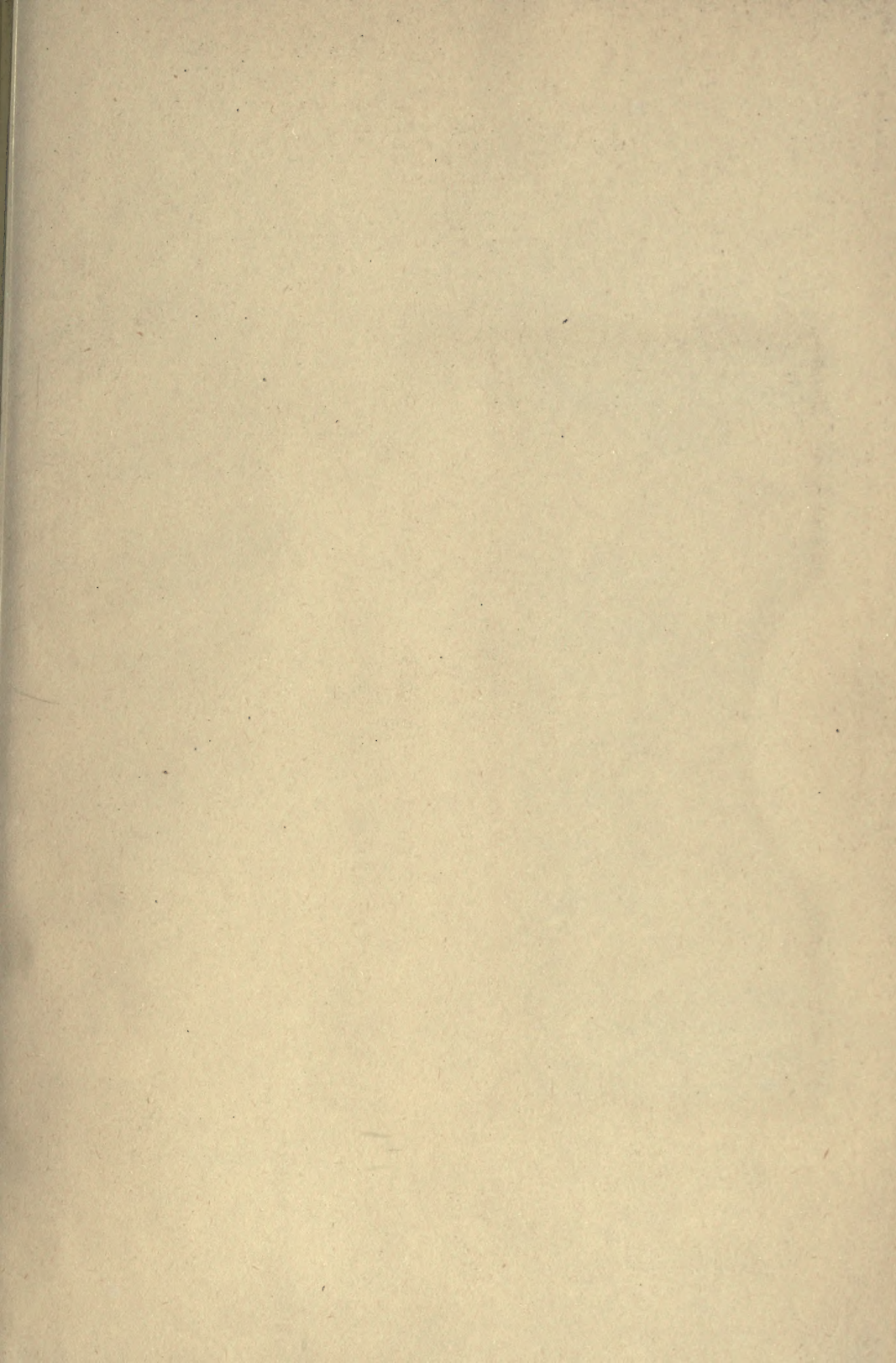
Holmes, SIR CHARLES JOHN (b. 1868). British art critic and painter. Born at Stratton, Cornwall, Nov. 11, 1868, he was educated at Eton and Oxford and studied at the Slade school. He edited *The Burlington Magazine*, 1903-9; was Slade professor at Oxford, 1904-10; director and secretary of the National Portrait Gallery, 1909-16; director of the National Gallery, 1916; and knighted 1921. Member of the New English Art Club, he exhibited landscapes which, with his *Notes on the Science of Picture-Making*, 1909, and on the Art of Rembrandt, 1911, virtually summarise his philosophy of art. He has also published an appreciation of Hokusai, 1898. There are examples of his art at the Tate Gallery, the Ashmolean Museum, Oxford, and at Manchester and Johannesburg.



Sir C. J. Holmes,
British art critic
Elliott & Fry



Holmby House, Northamptonshire. The modern manor house, built in the 19th century



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